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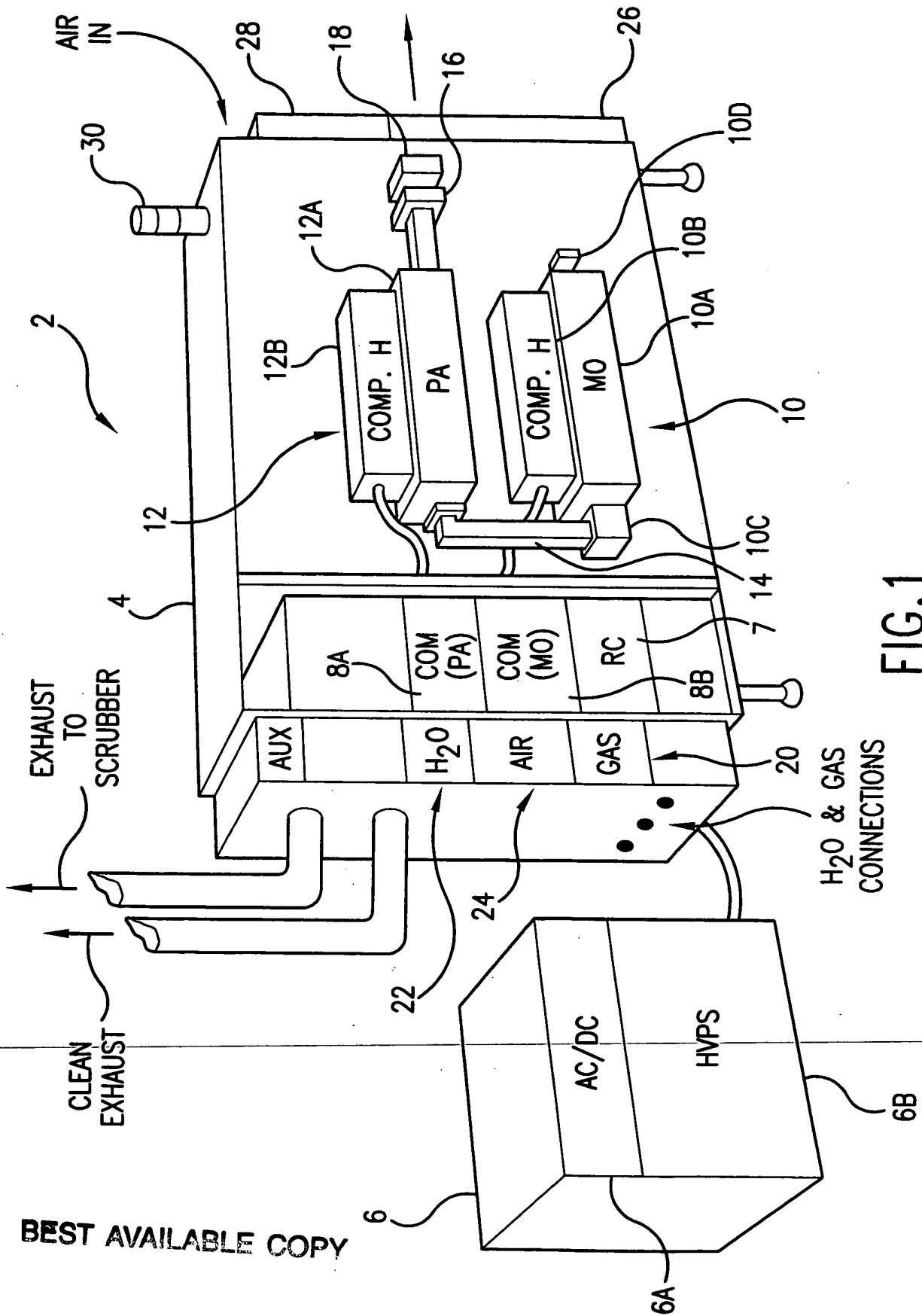


FIG.1

20240604-042602

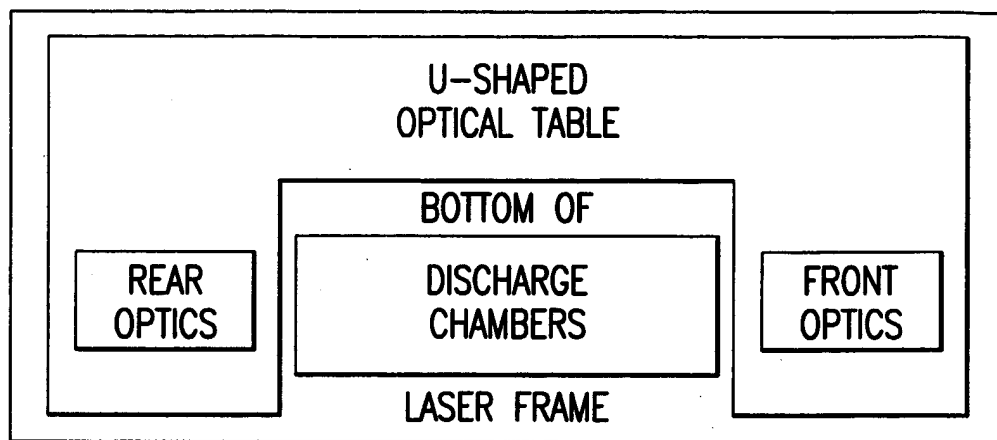


FIG. 1A

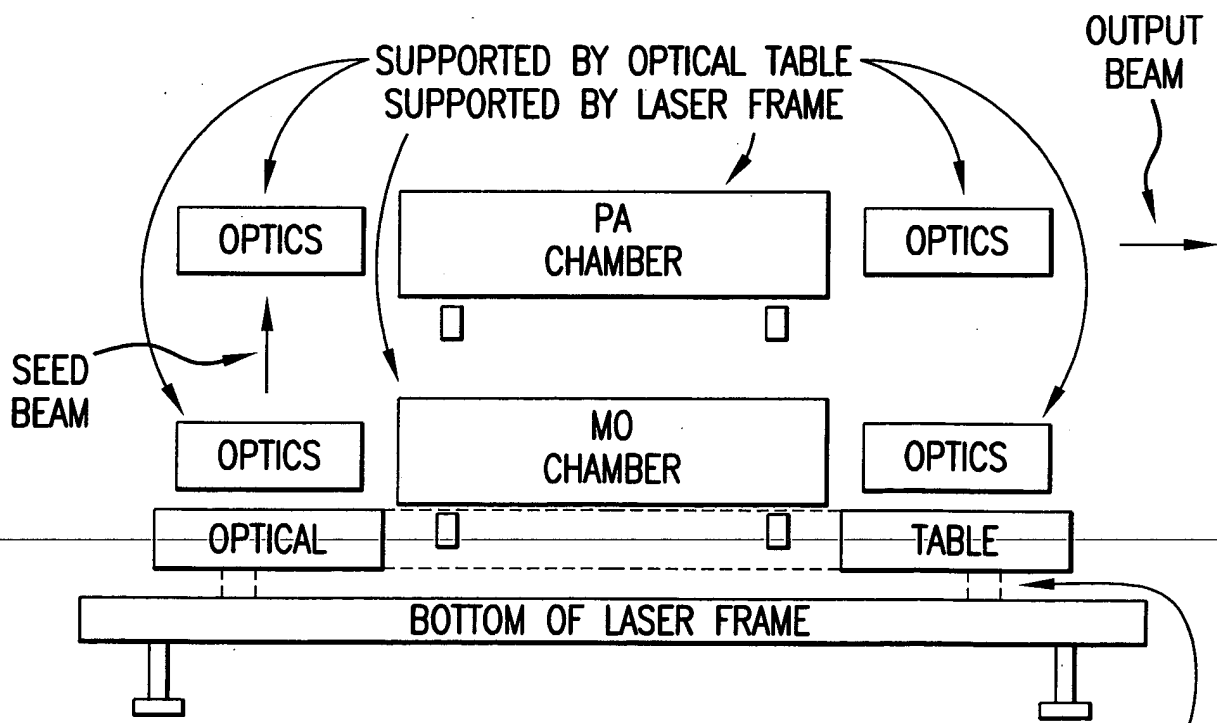


FIG. 1B

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KINEMATIC SUPPORT

BALL IN GROOVE

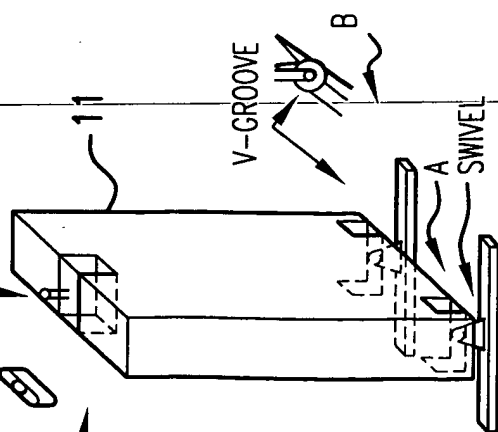


FIG. 1C1

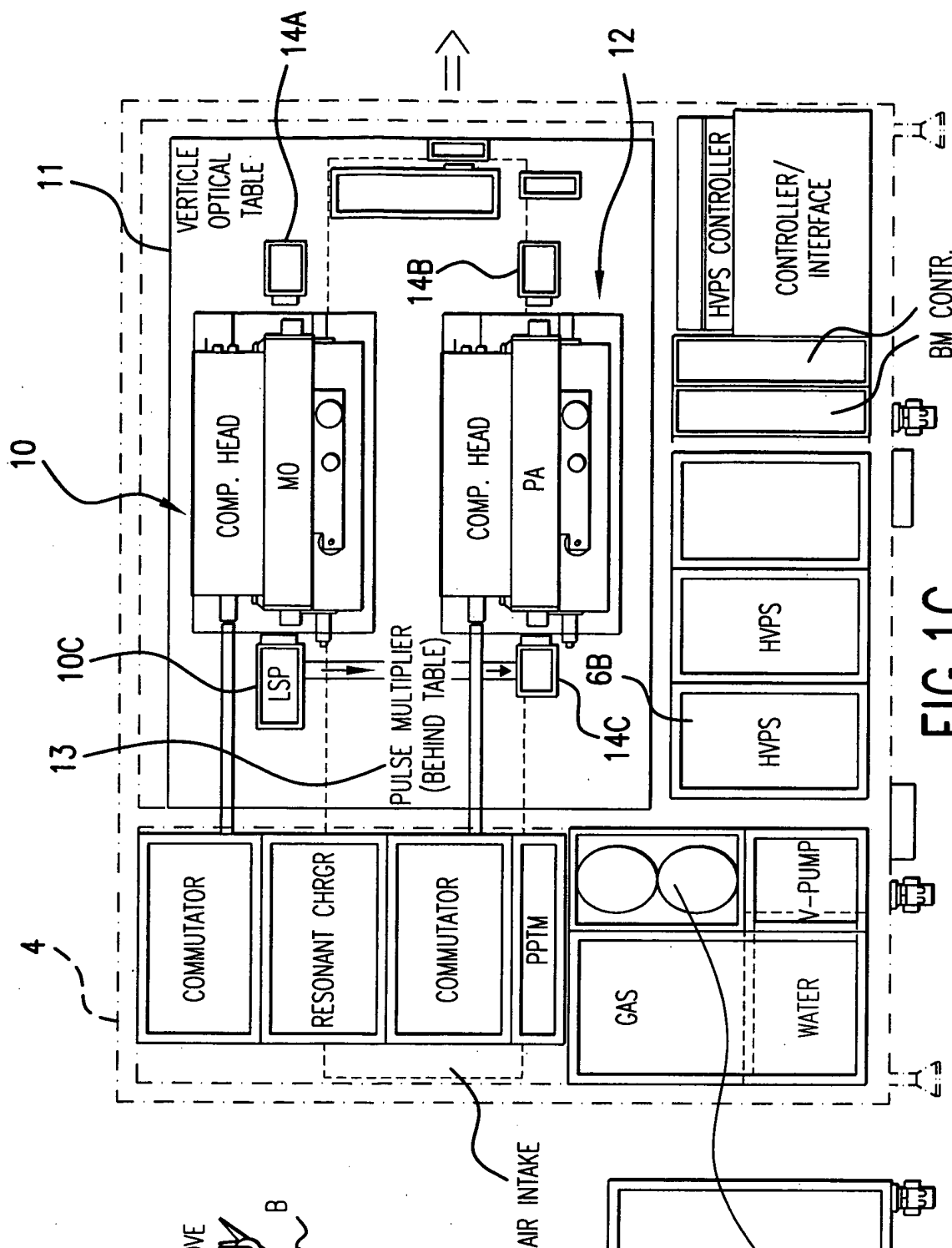


FIG. 1C

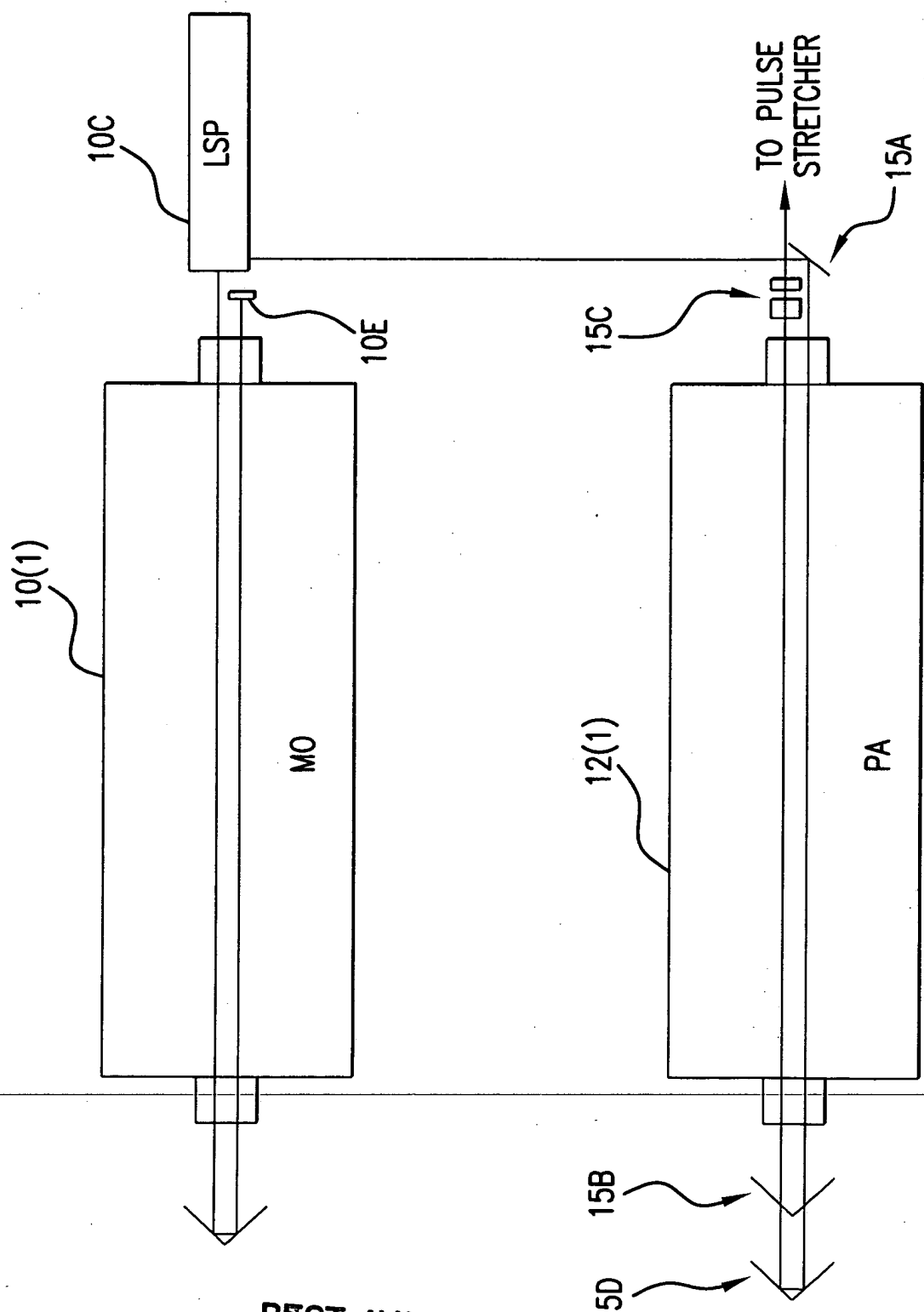


FIG.1D

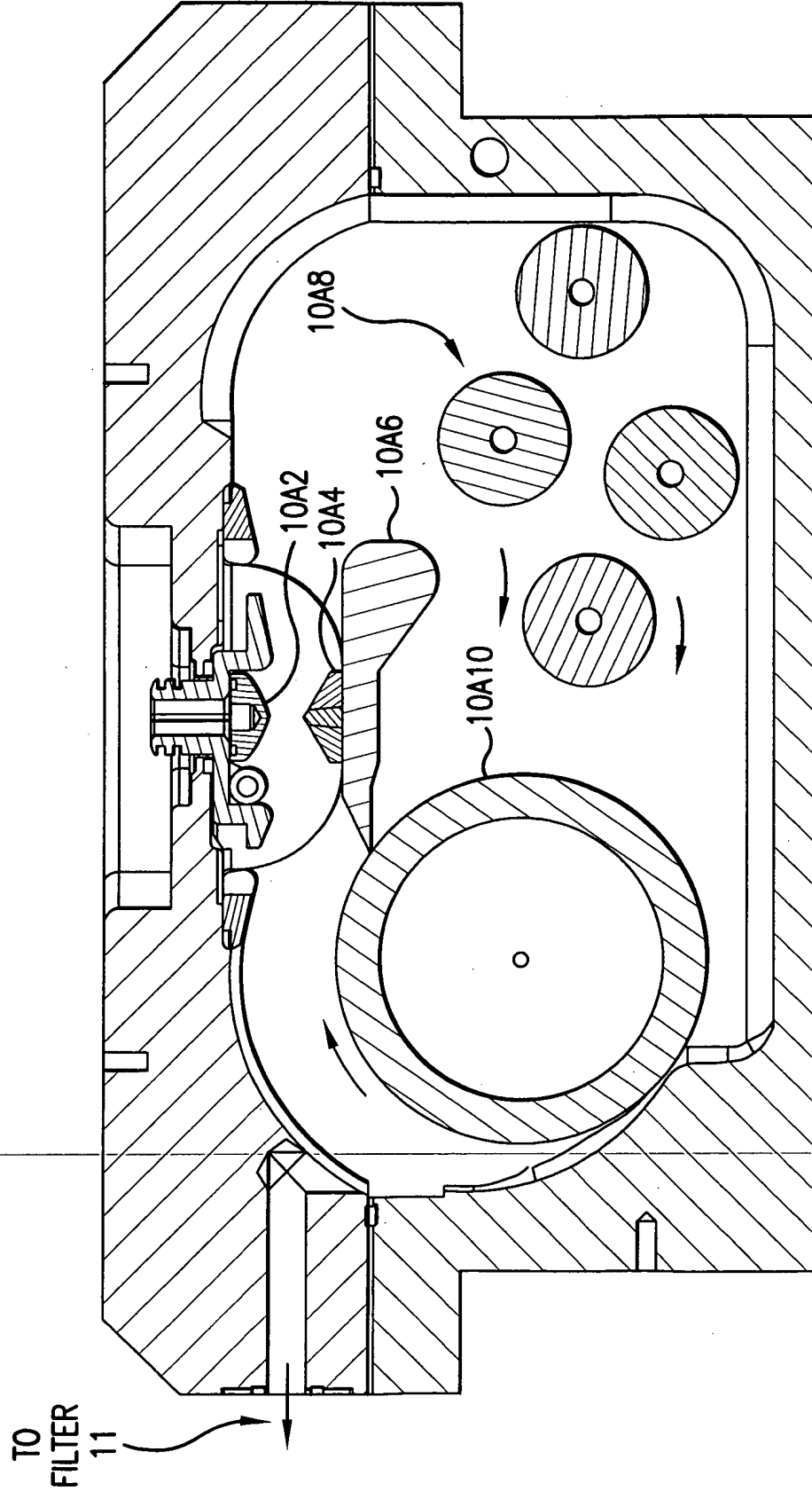


FIG. 2

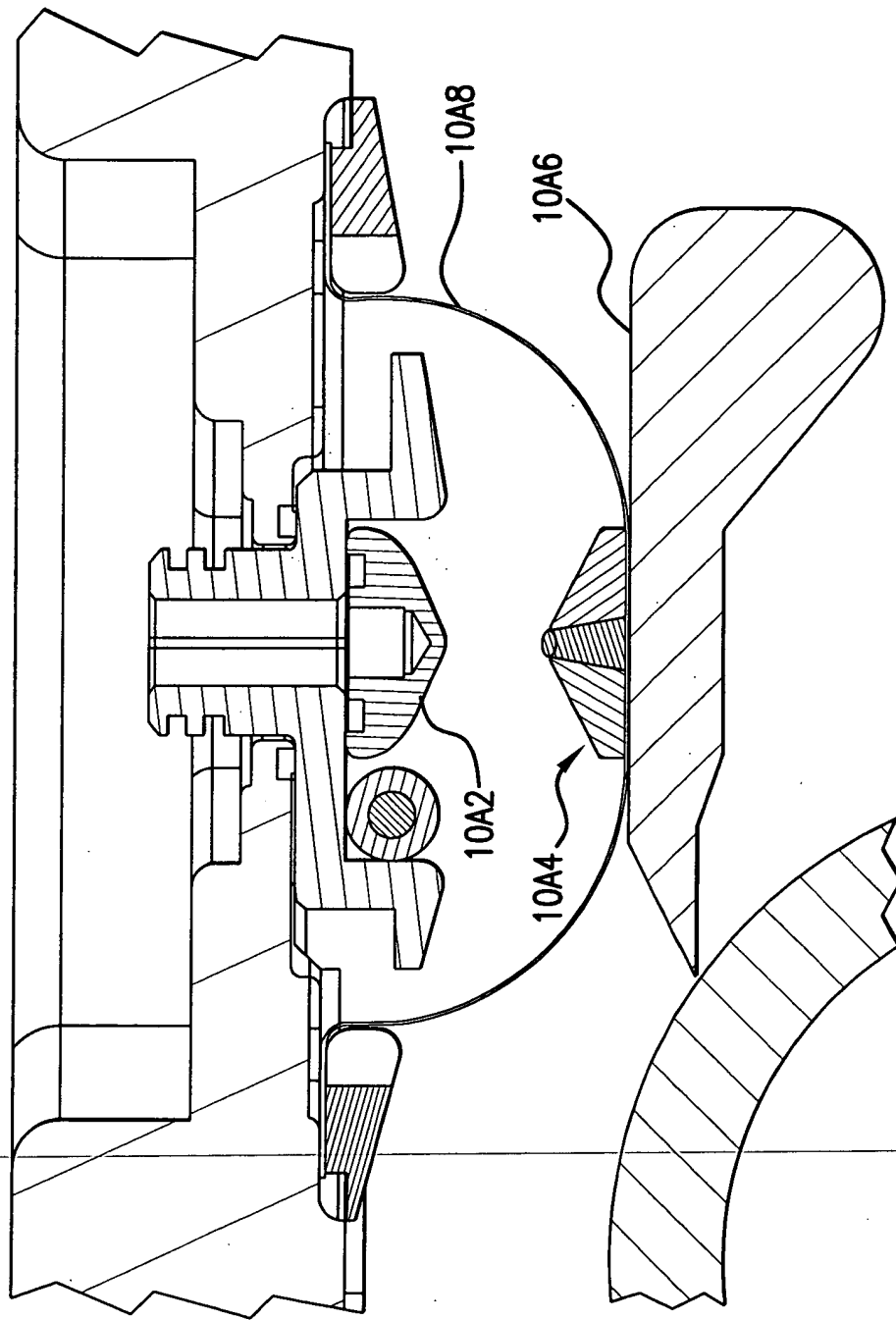


FIG. 3

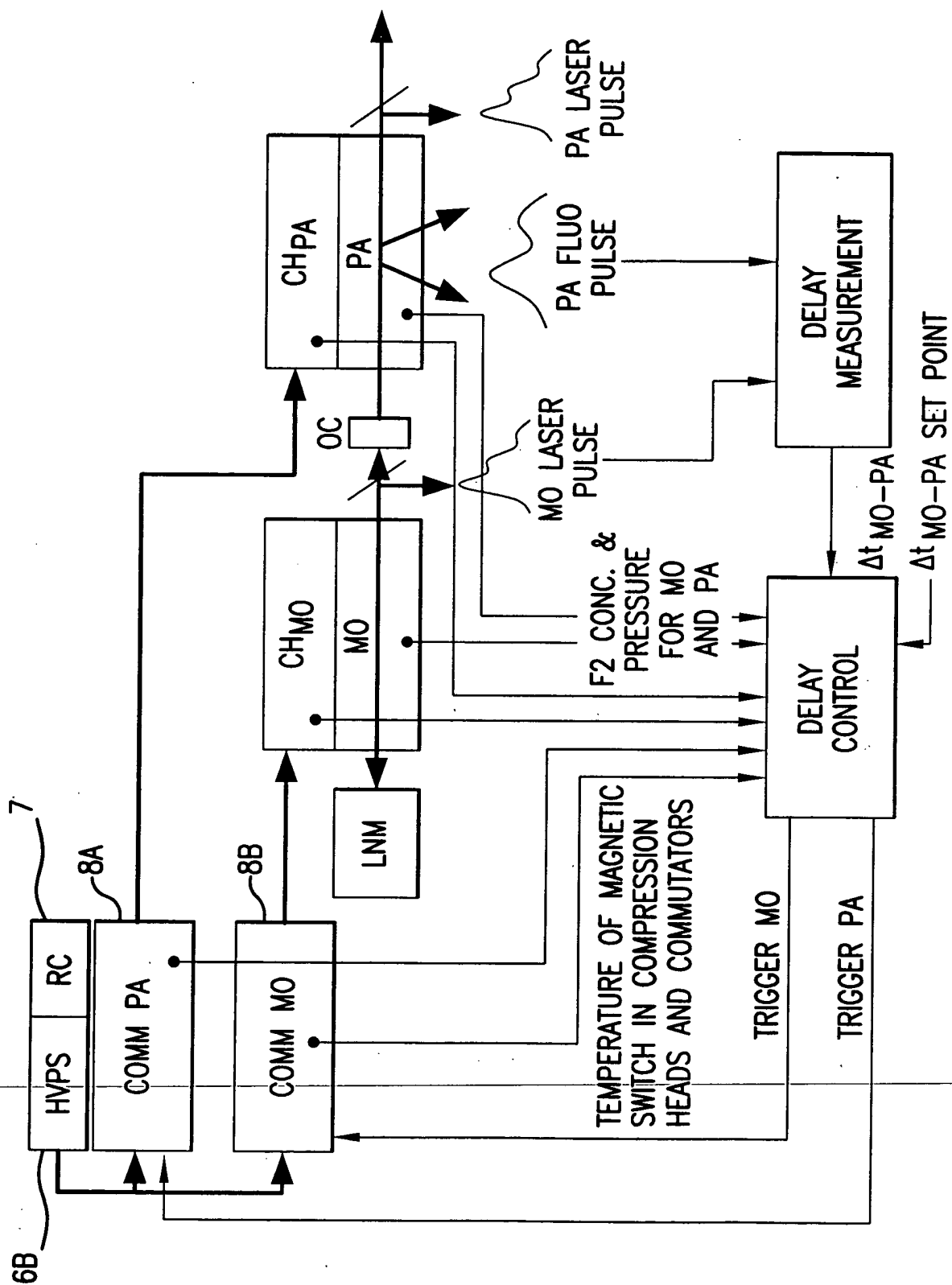


FIG.4

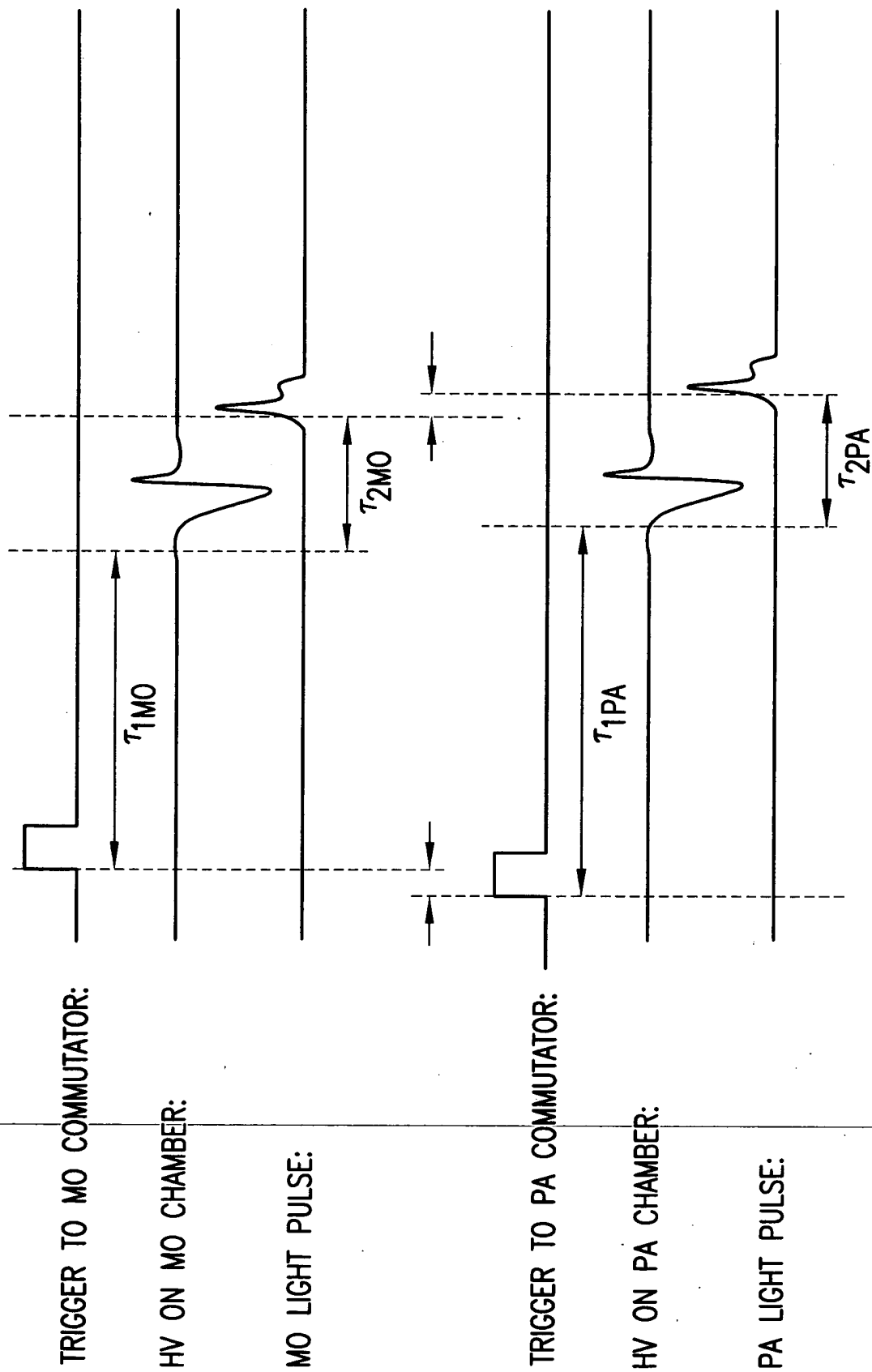


FIG.4A

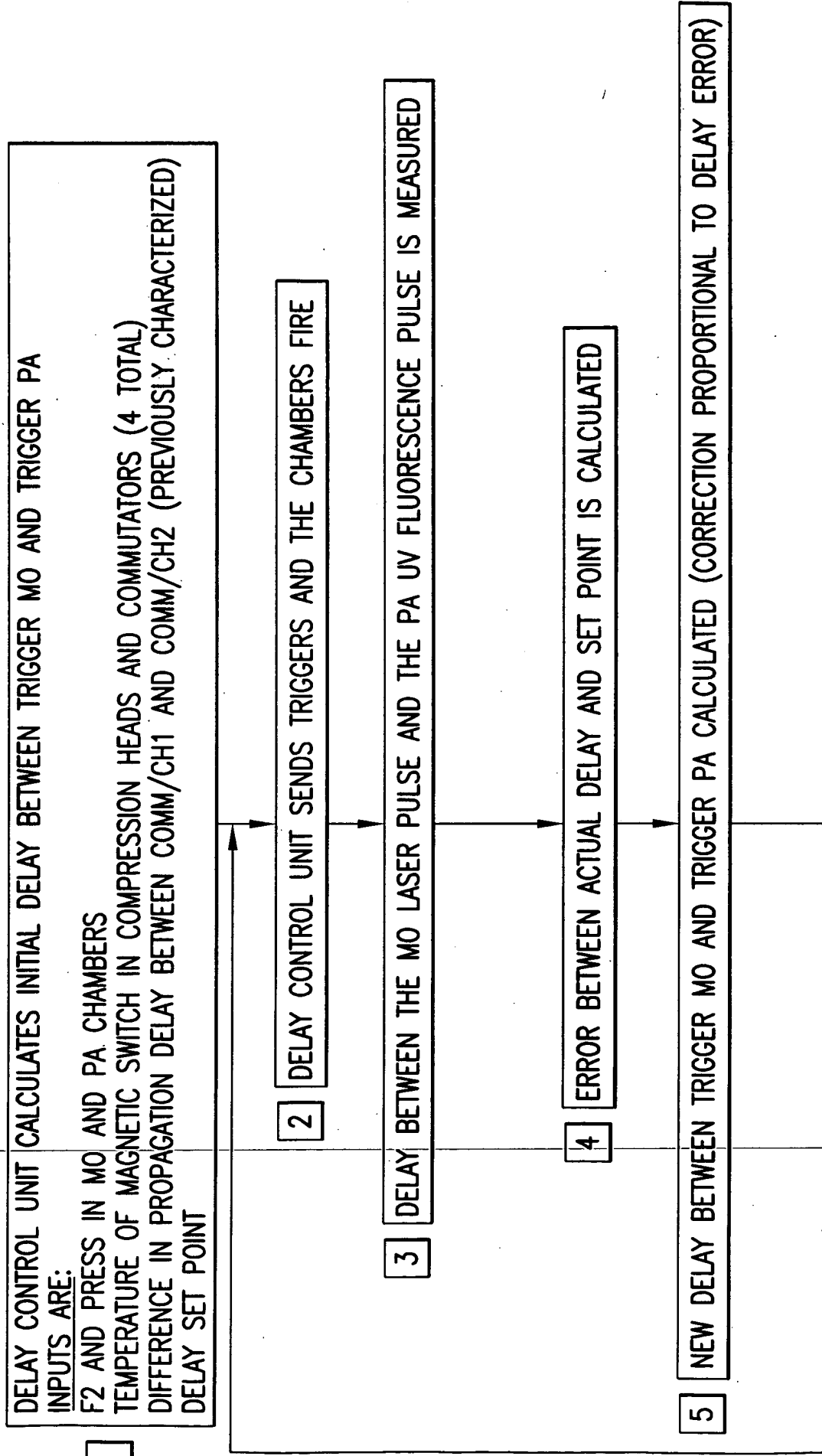


FIG. 4B

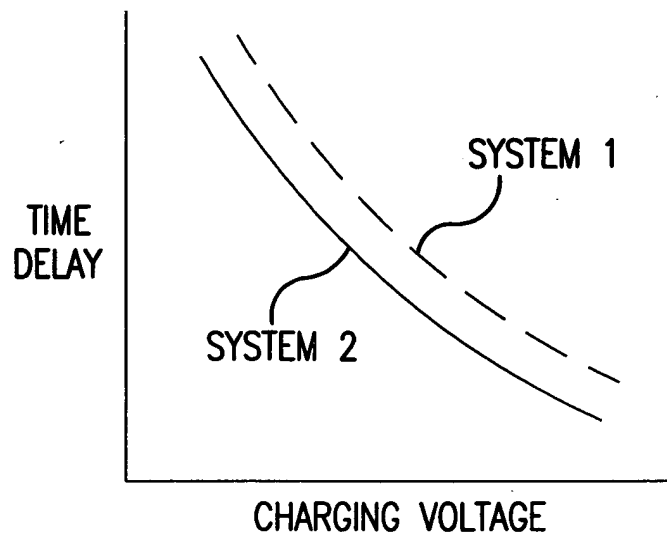


FIG.4C

```

graph TD
    START([START]) --> D1{HAS 1 MINUTE  
ELAPSED SINCE  
PAT?}
    D1 -- Y --> D2{HAS LASER  
PULSE BEEN  
REQUESTED?}
    D1 -- N --> S1[SET TD = TDL]
    S1 --> D3{HAS LASER  
PULSE BEEN  
REQUESTED?}
    D3 -- Y --> S2[SET TD = 110ns]
    D3 -- N --> D4{HAS TIME  
SINCE MOT  
EXCEEDED  
TD?}
    S2 --> D5{DOES  
MO P-CELL  
> THRESHOLD?}
    D5 -- Y --> S3[MEASURE  
MO P-CELL]
    D5 -- N --> D2
    S3 --> D6{DOES  
PA P-CELL  
> THRESHOLD?}
    D6 -- Y --> S4[STOP TIMER  
T2 AND  
CALCULATE  
TPA]
    D6 -- N --> S5[MEASURE  
PA P-CELL]
    S5 --> S6[STOP TIMER  
T1 AND  
CALCULATE  
TMO]
    S6 --> D2
    S4 --> S7[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S7 --> D4
    D4 -- Y --> S8[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S8 --> D3
    S7 --> S9[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S9 --> D3
    S4 --> S10[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S10 --> D4
    S9 --> S11[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S11 --> D3
    S10 --> S12[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S12 --> D4
    S11 --> S13[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S13 --> D3
    S12 --> S14[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S14 --> D4
    S13 --> S15[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S15 --> D3
    S14 --> S16[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S16 --> D4
    S15 --> S17[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S17 --> D3
    S16 --> S18[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S18 --> D4
    S17 --> S19[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S19 --> D3
    S18 --> S20[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S20 --> D4
    S19 --> S21[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S21 --> D3
    S20 --> S22[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S22 --> D4
    S21 --> S23[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S23 --> D3
    S22 --> S24[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S24 --> D4
    S23 --> S25[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S25 --> D3
    S24 --> S26[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S26 --> D4
    S25 --> S27[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S27 --> D3
    S26 --> S28[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S28 --> D4
    S27 --> S29[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S29 --> D3
    S28 --> S30[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S30 --> D4
    S29 --> S31[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S31 --> D3
    S30 --> S32[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S32 --> D4
    S31 --> S33[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S33 --> D3
    S32 --> S34[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S34 --> D4
    S33 --> S35[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S35 --> D3
    S34 --> S36[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S36 --> D4
    S35 --> S37[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S37 --> D3
    S36 --> S38[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S38 --> D4
    S37 --> S39[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S39 --> D3
    S38 --> S40[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S40 --> D4
    S39 --> S41[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S41 --> D3
    S40 --> S42[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S42 --> D4
    S41 --> S43[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S43 --> D3
    S42 --> S44[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S44 --> D4
    S43 --> S45[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S45 --> D3
    S44 --> S46[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S46 --> D4
    S45 --> S47[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S47 --> D3
    S46 --> S48[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S48 --> D4
    S47 --> S49[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S49 --> D3
    S48 --> S50[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S50 --> D4
    S49 --> S51[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S51 --> D3
    S50 --> S52[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S52 --> D4
    S51 --> S53[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S53 --> D3
    S52 --> S54[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S54 --> D4
    S53 --> S55[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S55 --> D3
    S54 --> S56[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S56 --> D4
    S55 --> S57[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S57 --> D3
    S56 --> S58[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S58 --> D4
    S57 --> S59[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S59 --> D3
    S58 --> S60[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S60 --> D4
    S59 --> S61[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S61 --> D3
    S60 --> S62[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S62 --> D4
    S61 --> S63[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S63 --> D3
    S62 --> S64[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S64 --> D4
    S63 --> S65[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S65 --> D3
    S64 --> S66[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S66 --> D4
    S65 --> S67[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S67 --> D3
    S66 --> S68[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S68 --> D4
    S67 --> S69[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S69 --> D3
    S68 --> S70[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S70 --> D4
    S69 --> S71[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S71 --> D3
    S70 --> S72[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S72 --> D4
    S71 --> S73[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S73 --> D3
    S72 --> S74[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S74 --> D4
    S73 --> S75[TRIGGER MO  
RECORD  
MOT  
START  
TIMER  
T1]
    S75 --> D3
    S74 --> S76[TRIGGER PA  
RECORD  
PAT  
START  
TIMER  
T2]
    S76 --> D4
    S75 --> S77[TRIGGER MO  
RECORD  
MO
```

$$TD_L = \tau_{MO} - \tau_{PA} + \boxed{\text{NORMAL TARGET DELAY}}$$

NORMAL TARGET DELAY = 30ns (CONFIGURABLE)

20240619 042602

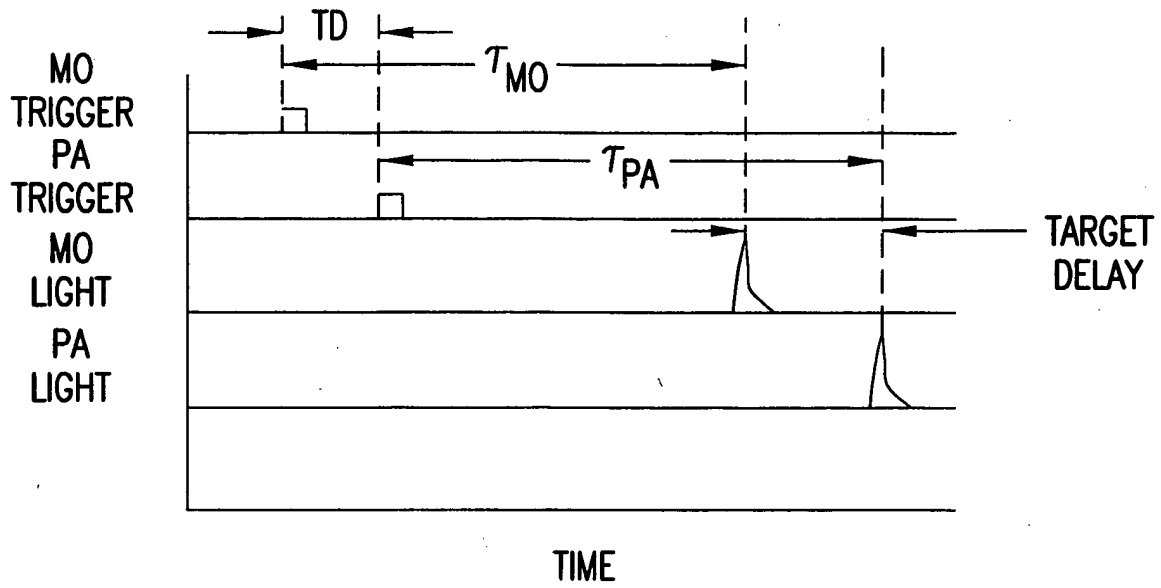
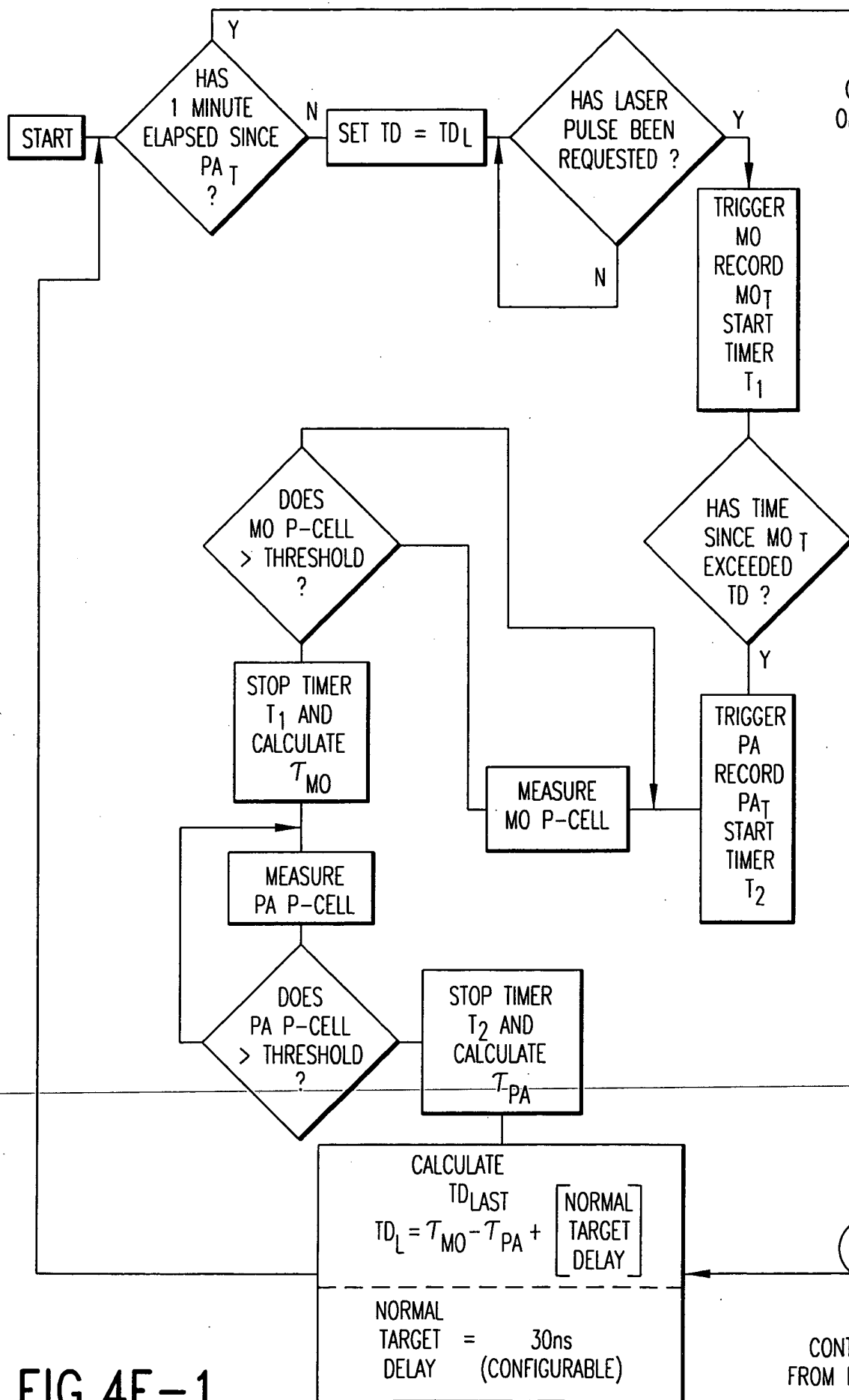


FIG.4D1



CONTINUED
FROM FIG.4E-1

N

HAS LASER
PULSE BEEN
REQUESTED ?

Y

TRIGGER
PA
RECORD
 PA_T
START
TIMER
 T_2

HAS
ELAPSED
TIME SINCE PA_T
EXCEEDED
40ns ?

TRIGGER
MO
RECORD
 MO_T
START
TIMER
 T_1

MEASURE
PA P-CELL

DOES
PA P-CELL
> THRESHOLD
?

STOP TIMER
 T_2 AND
CALCULATE
 τ_{PA}

STOP TIMER
 T_1 AND
CALCULATE
 τ_{MO}

DOES
MO P-CELL
> THRESHOLD
?

MEASURE
MO P-CELL

CONTINUED
ON FIG.4E-1

FIG.4E-2

209240" 6T99500T
10056619-042602

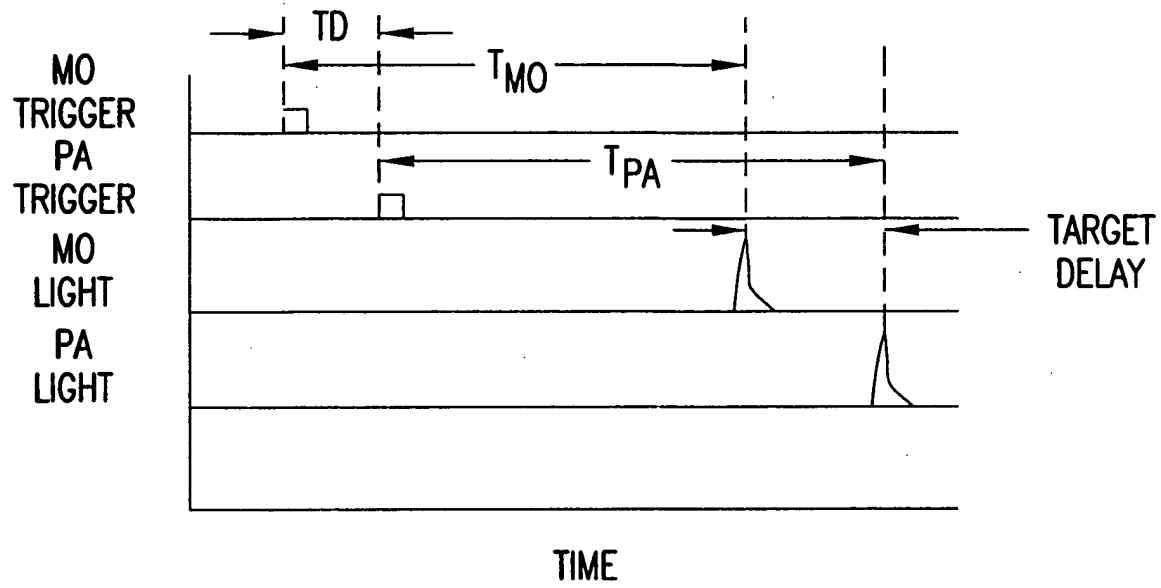


FIG.4E-3

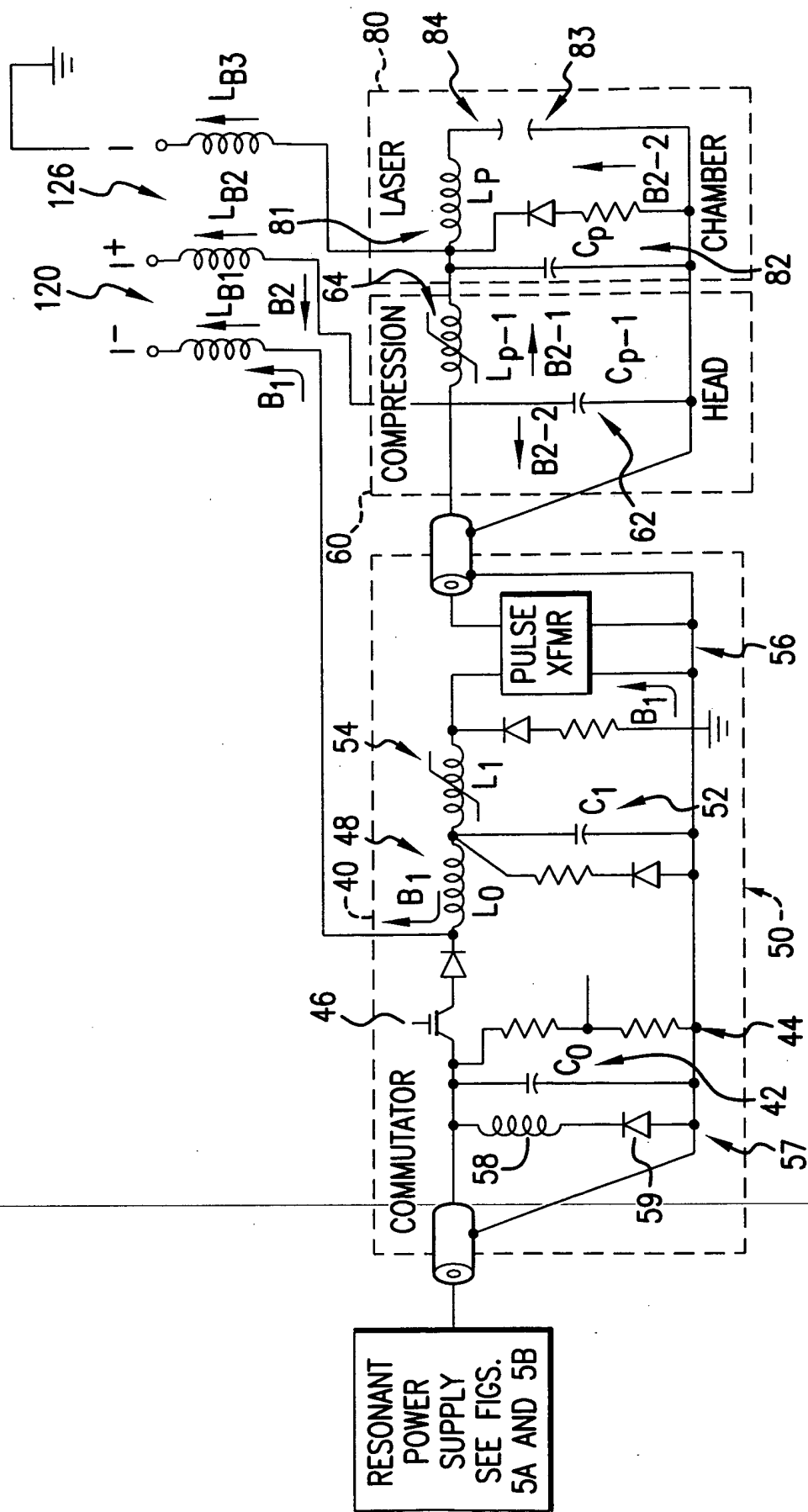


FIG.5A

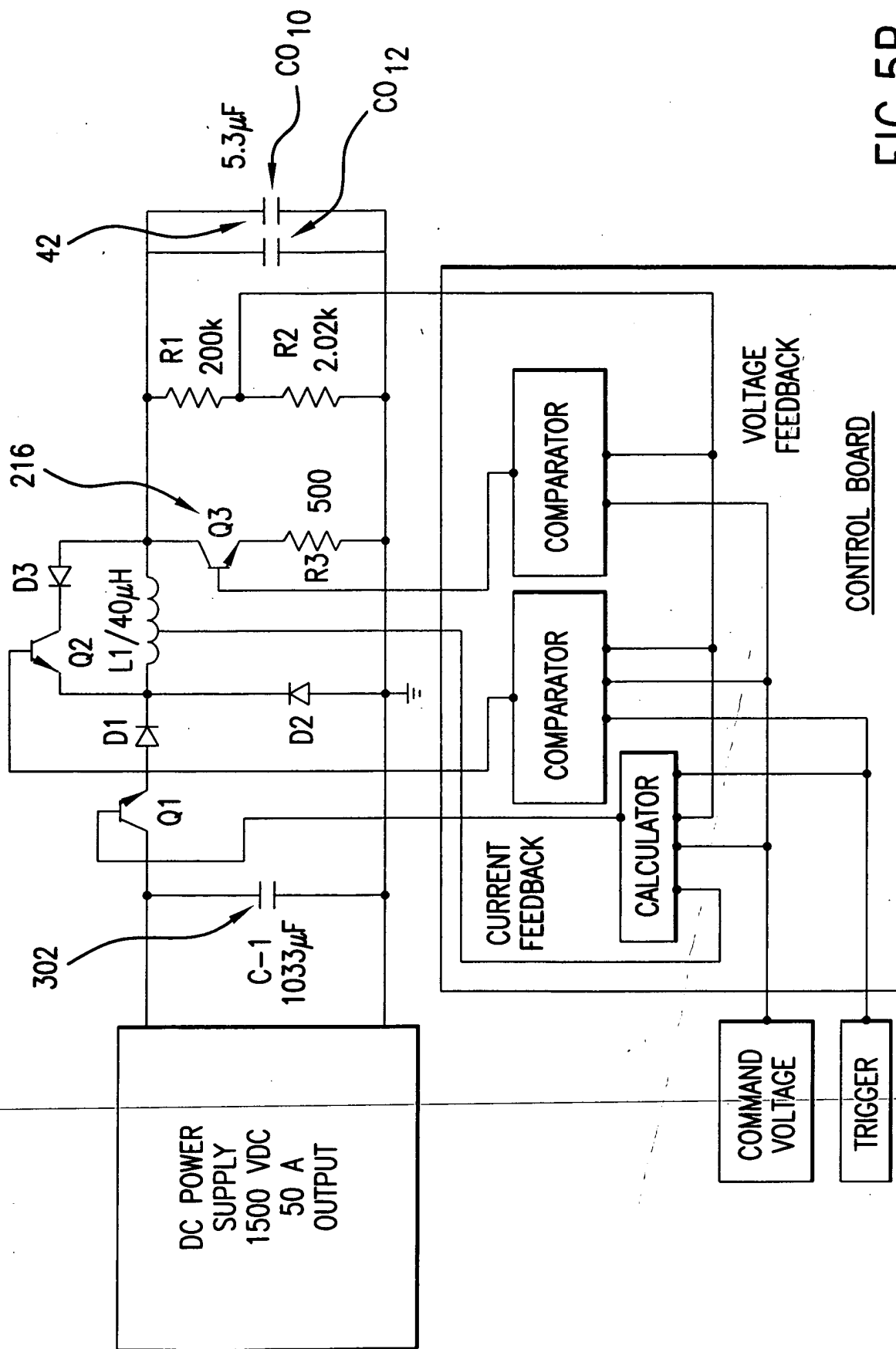


FIG. 5B

20240609 042607

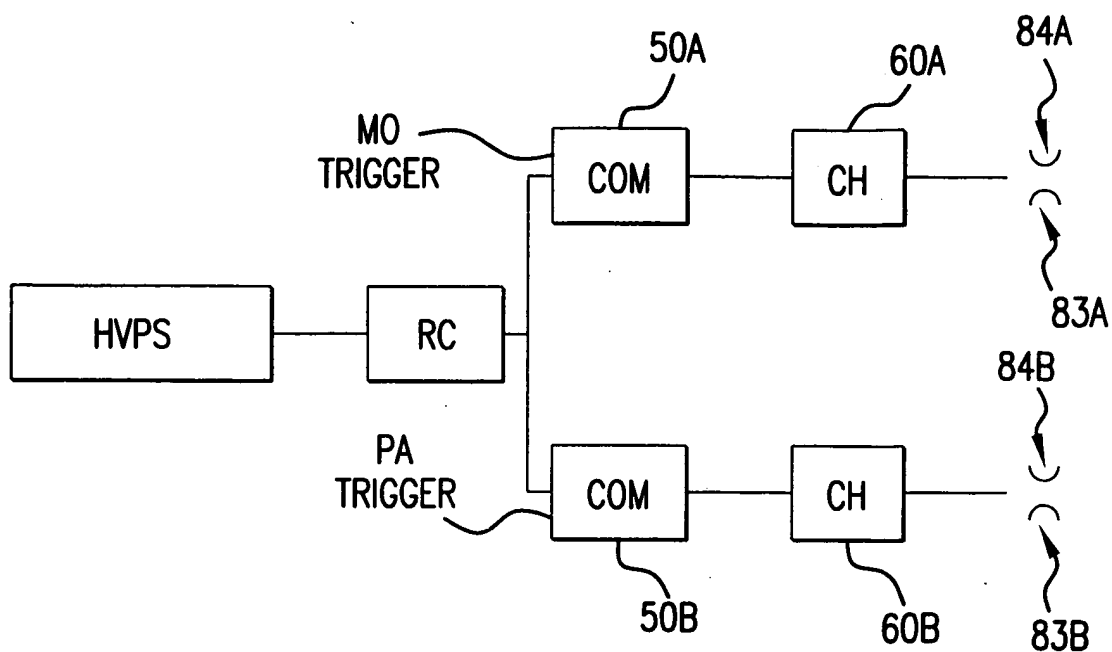


FIG. 5C1

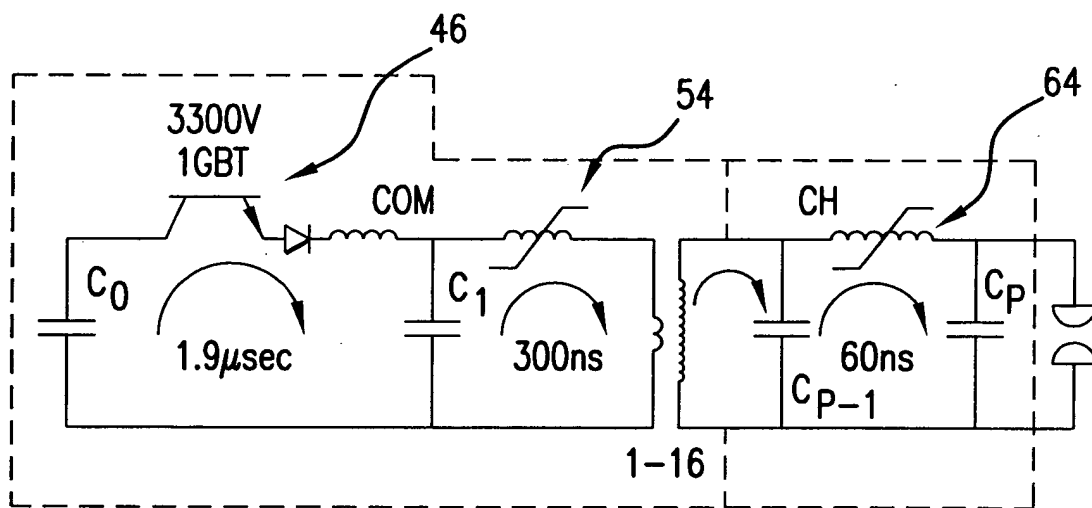


FIG. 5C2

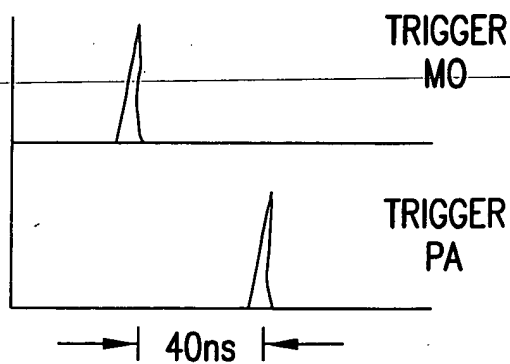


FIG. 5C3

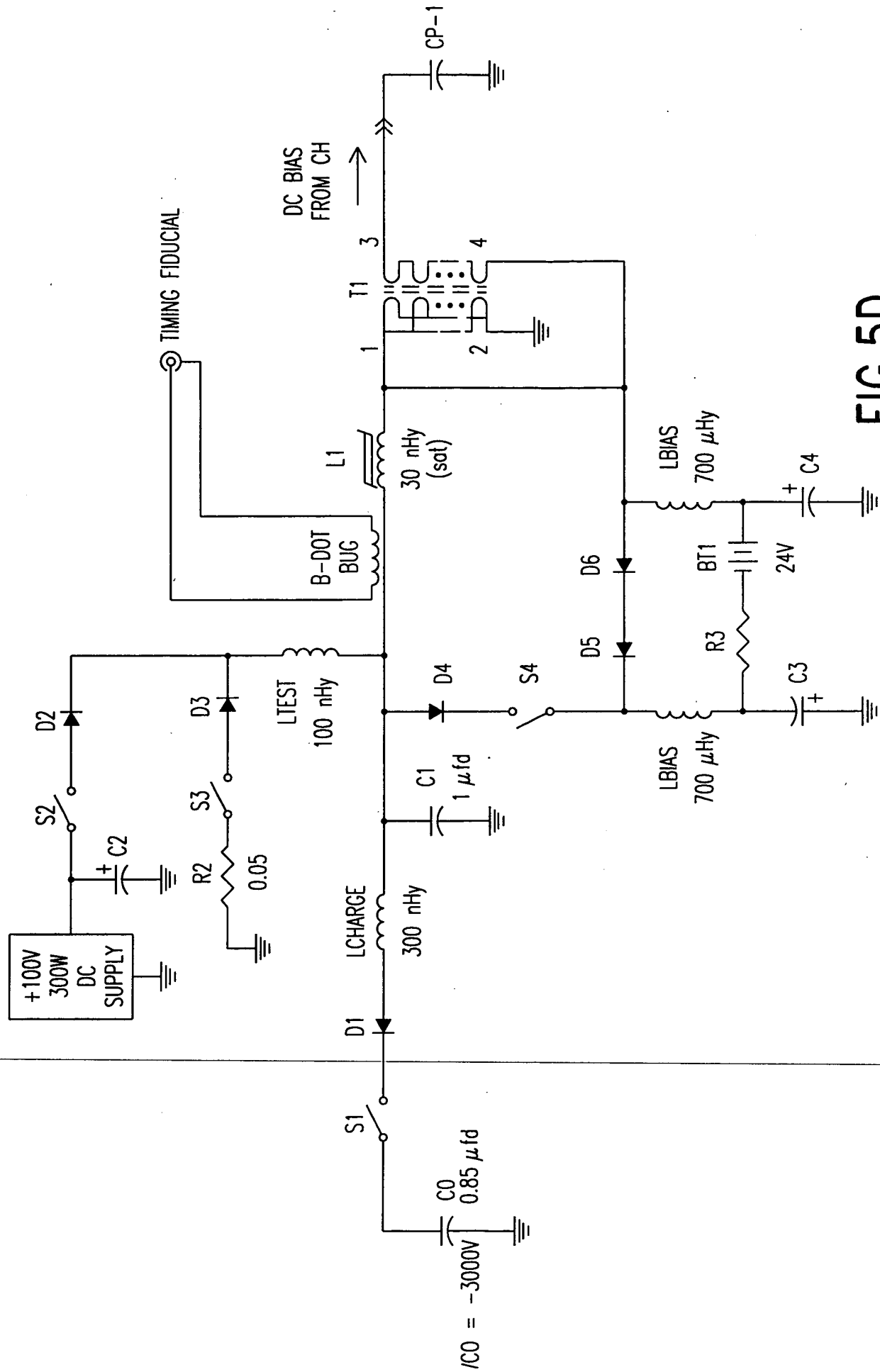
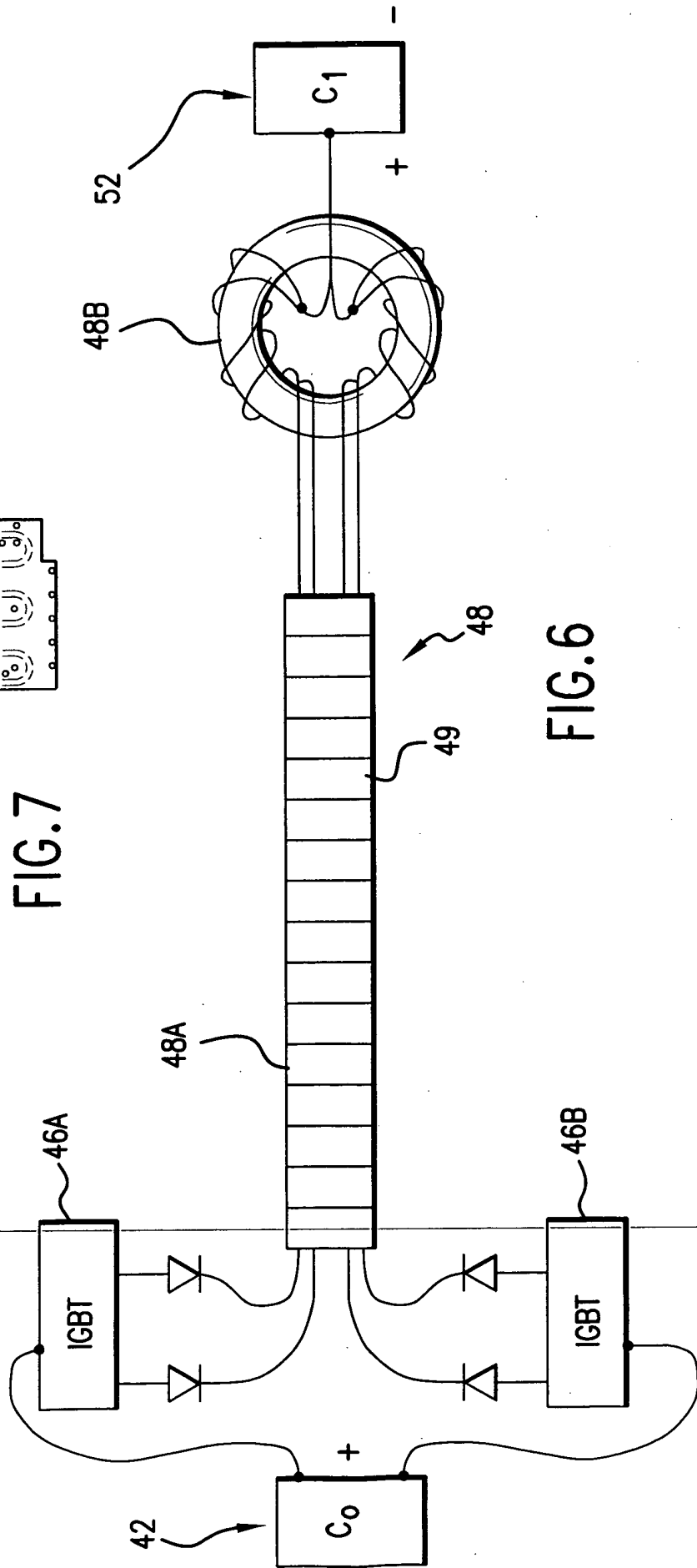
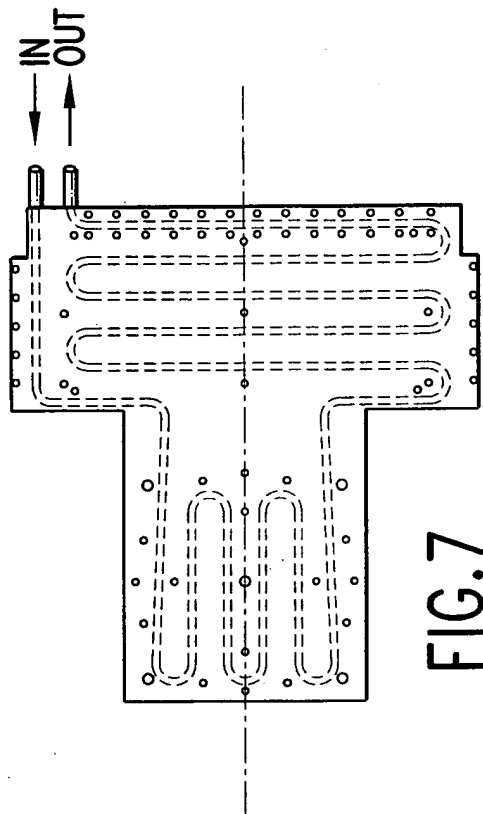


FIG.5D



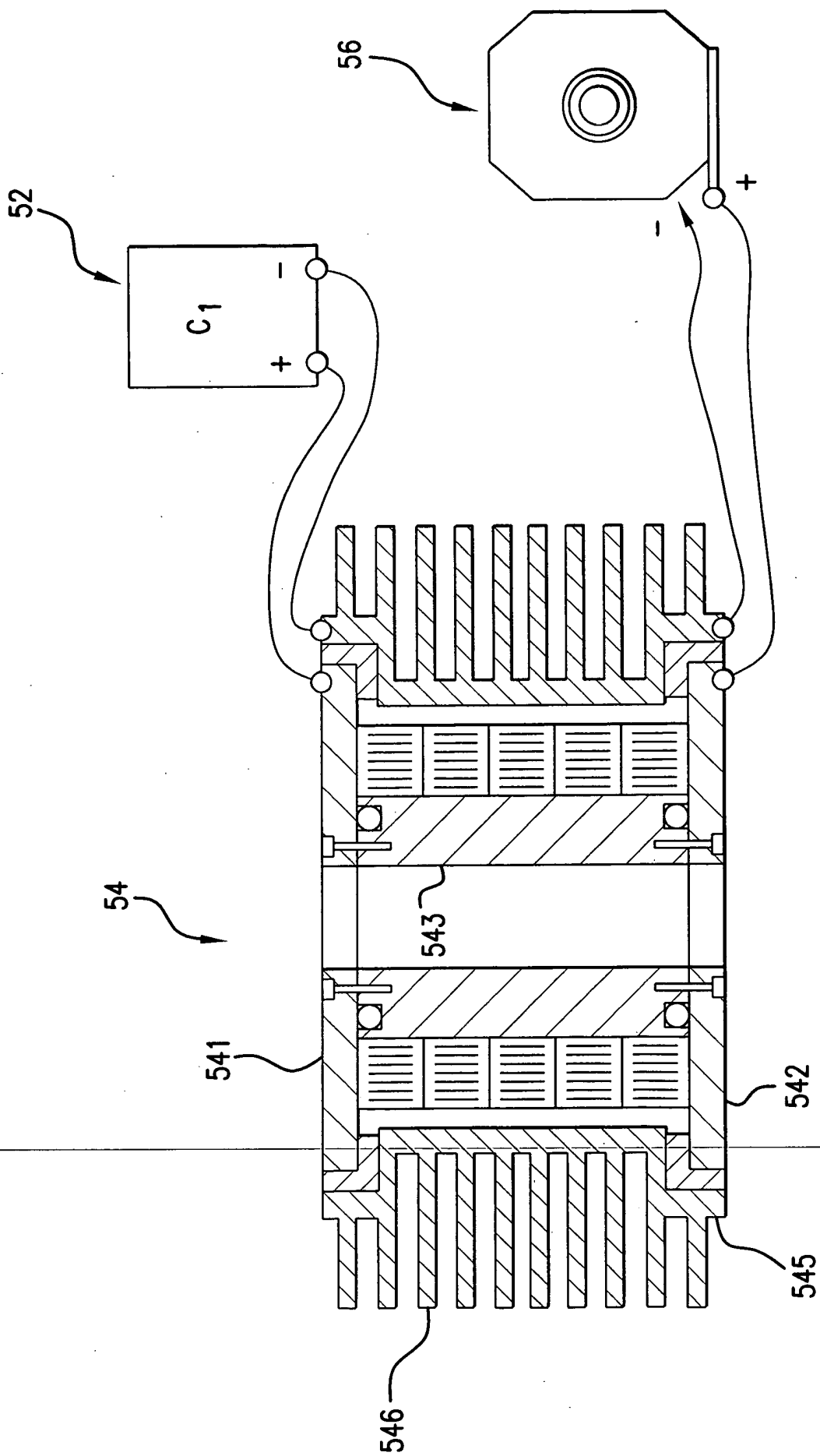


FIG.8

2009240" 6T99500T

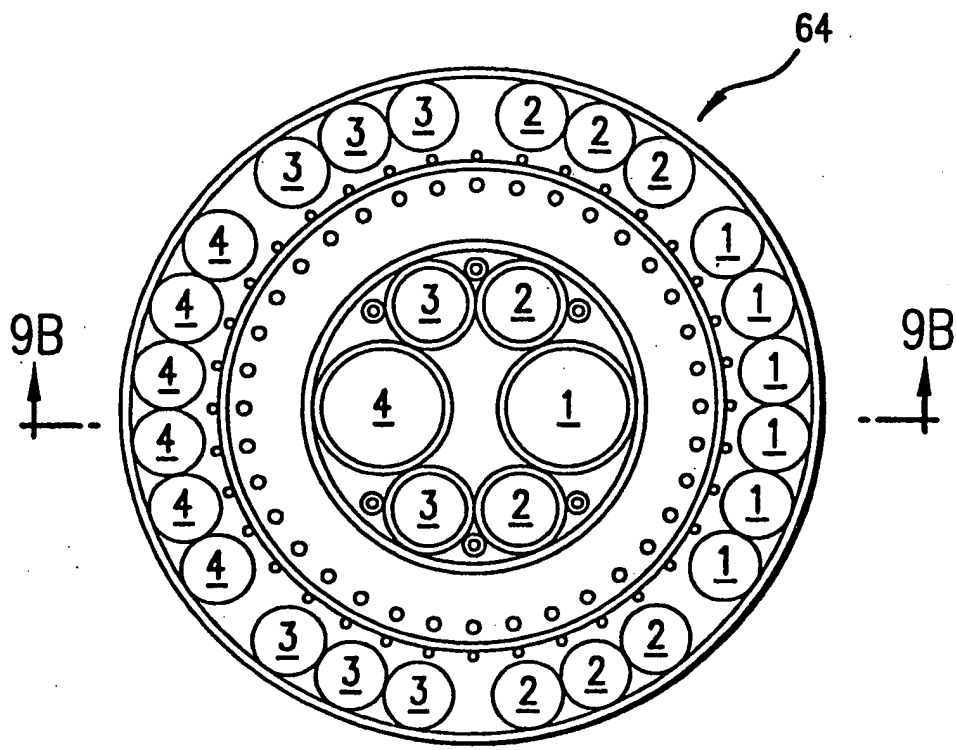


FIG. 9A

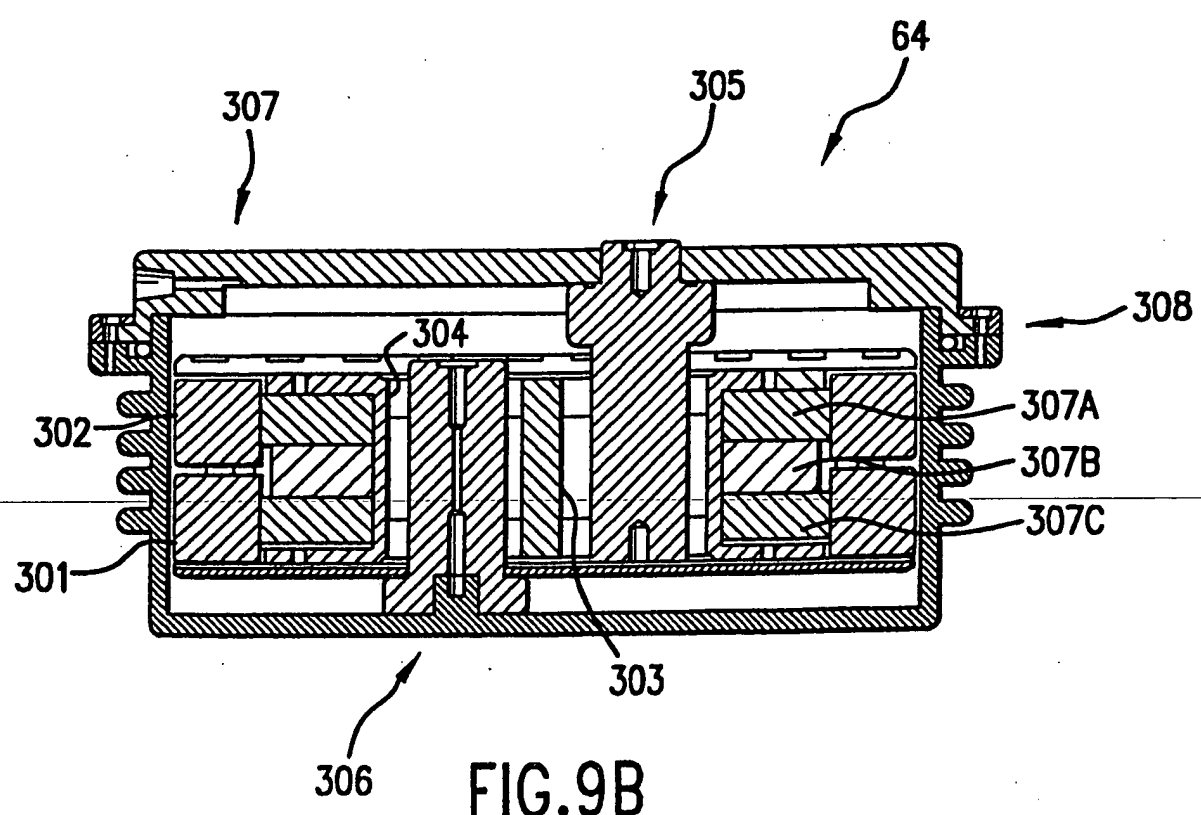
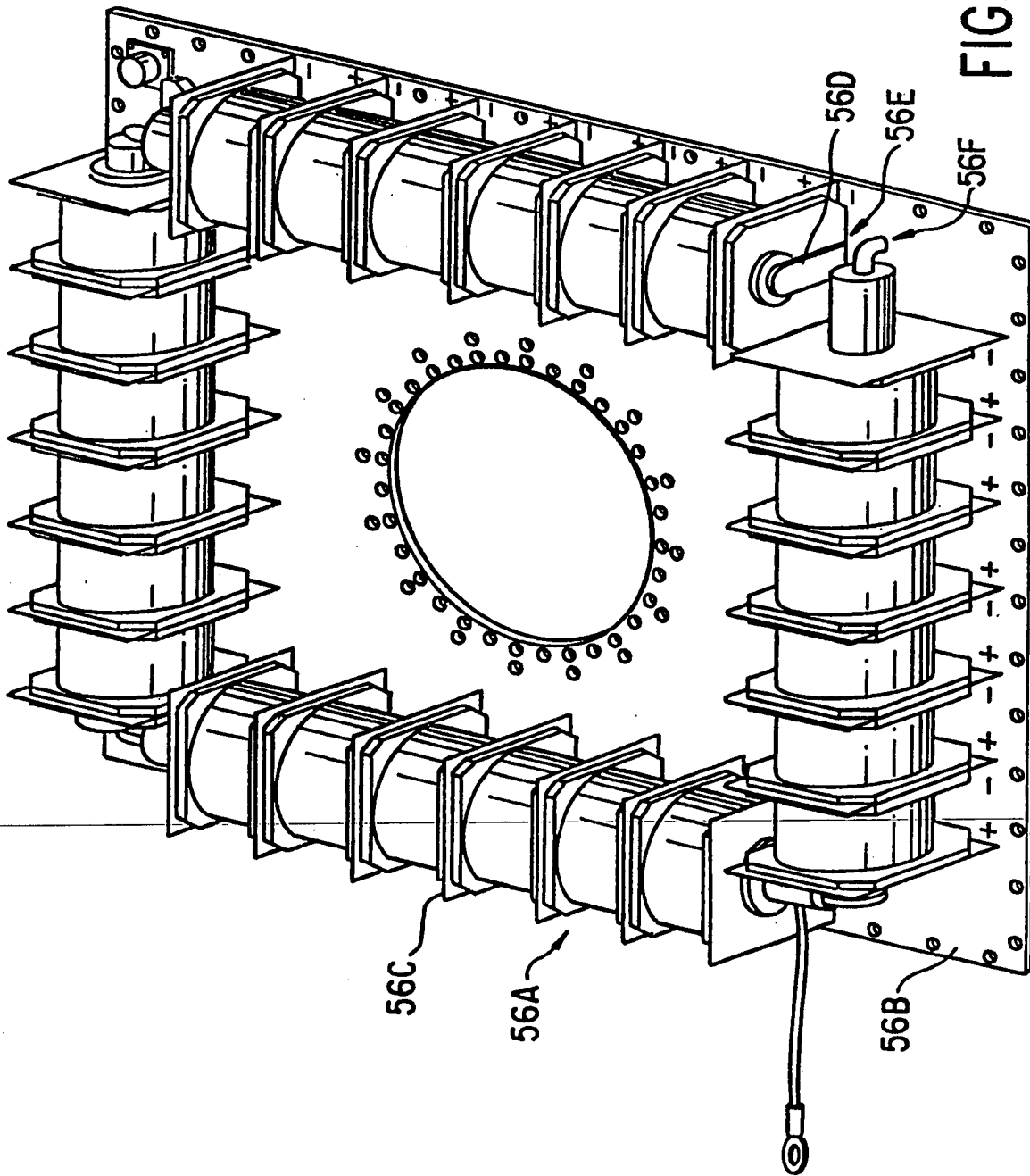


FIG. 9B



56A

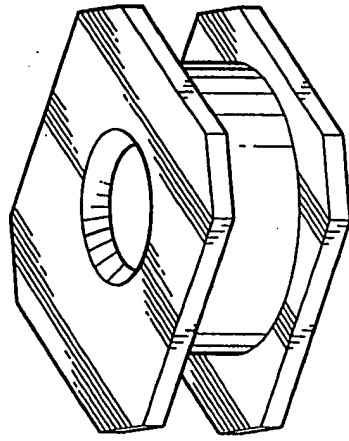


FIG. 10A

FIG. 10

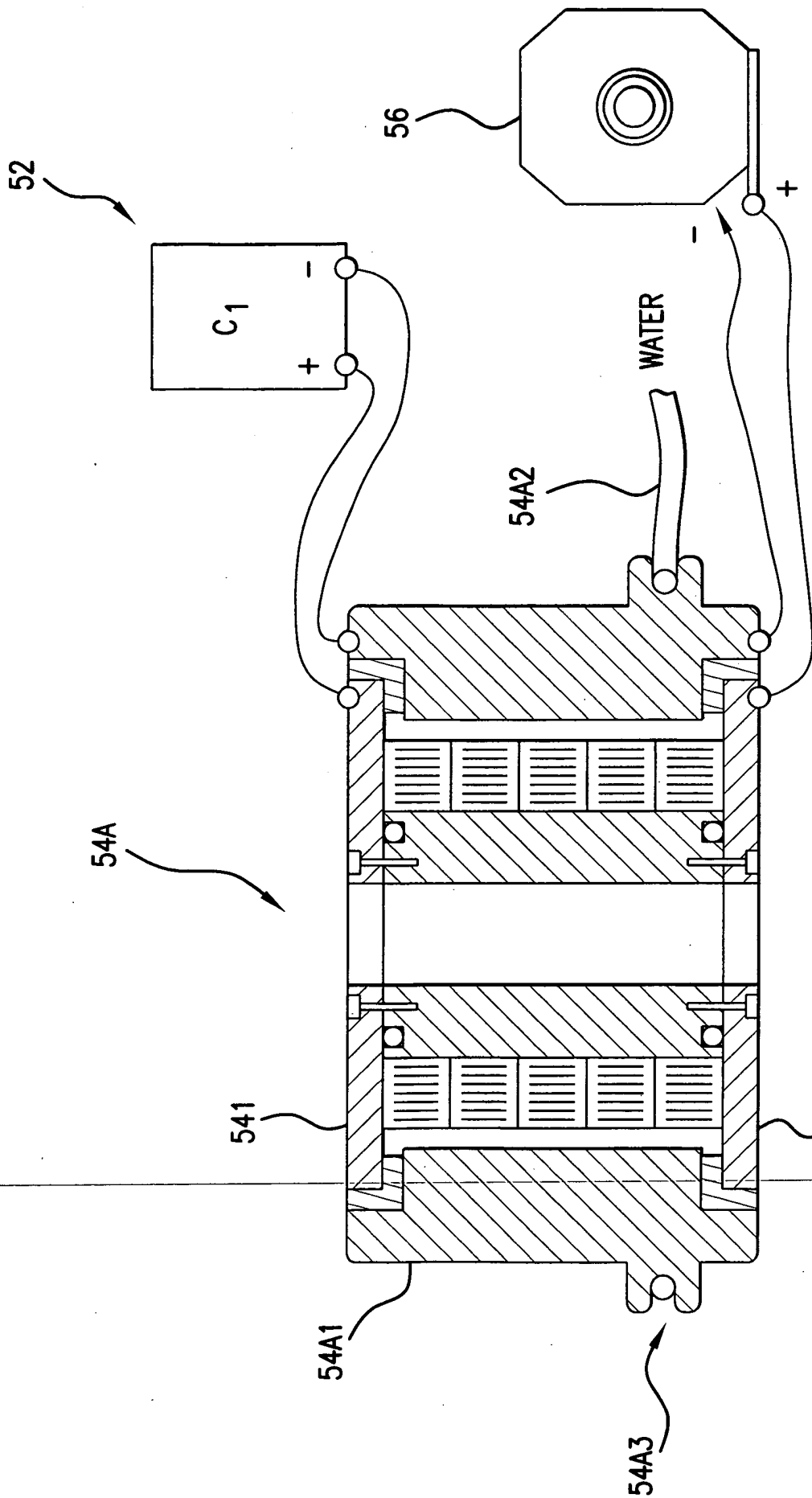
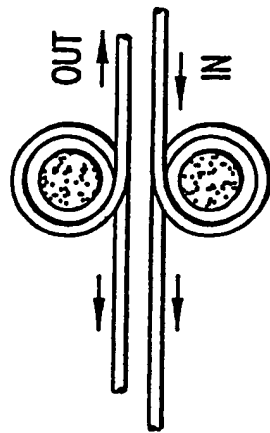
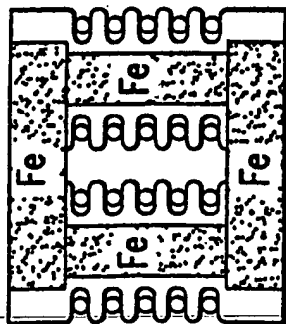
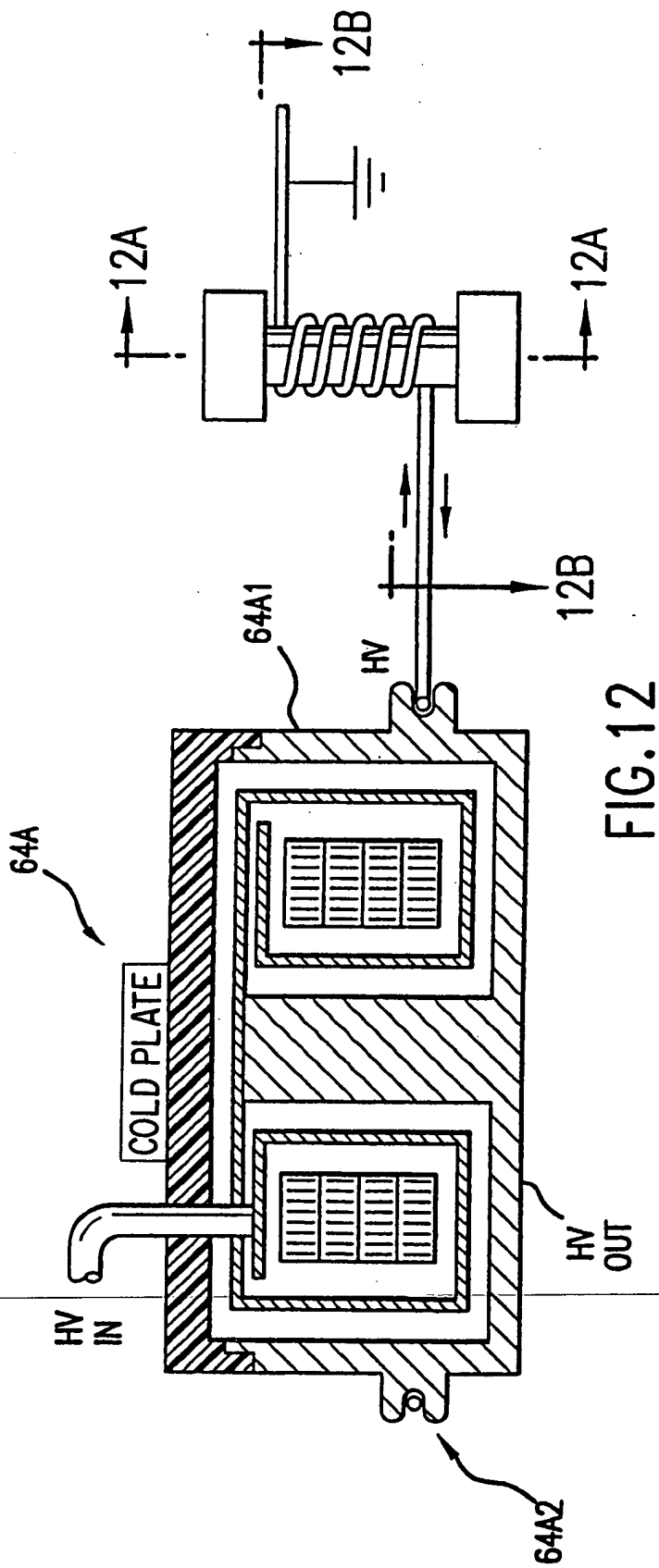


FIG.11



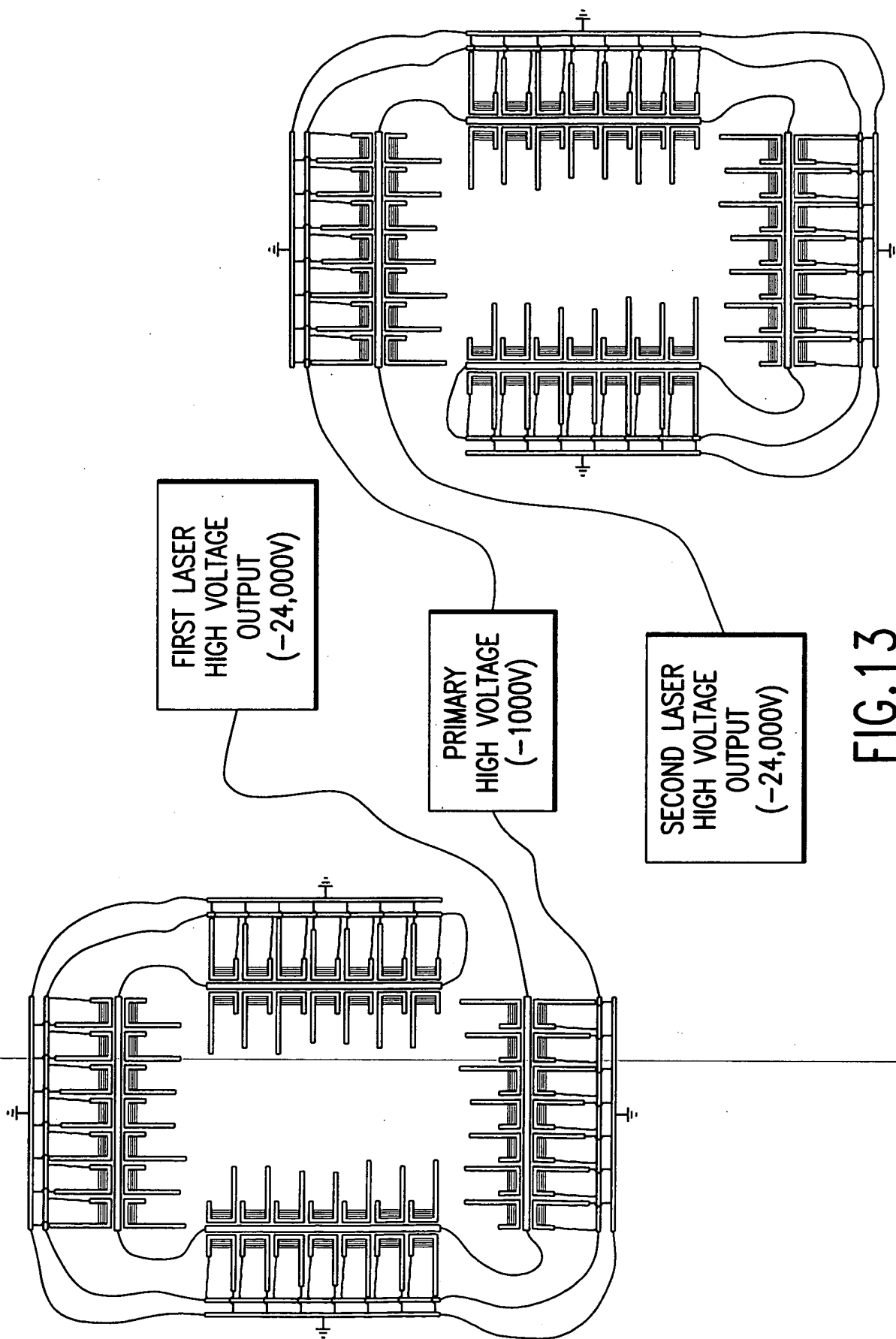


FIG.13

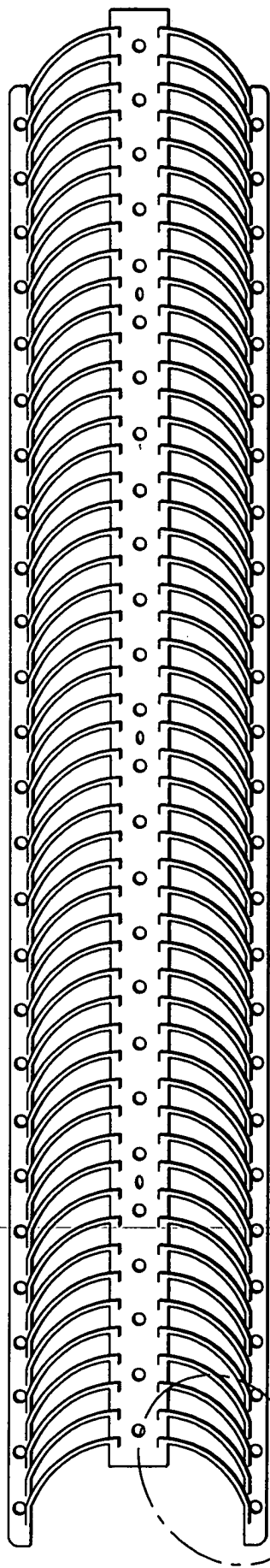


FIG. 13A(1)

12B

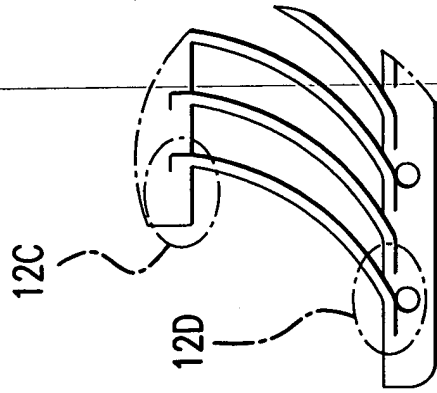


FIG. 13A(2)

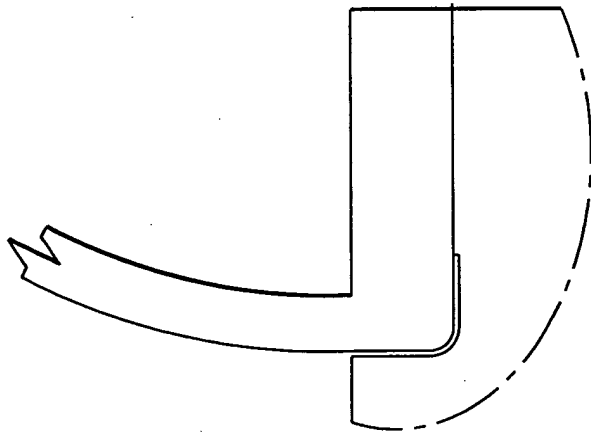


FIG. 13A(3)

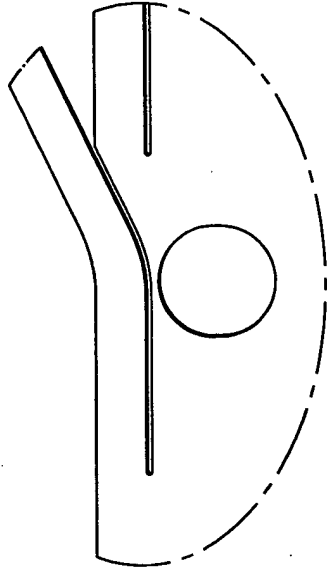


FIG. 13A(4)

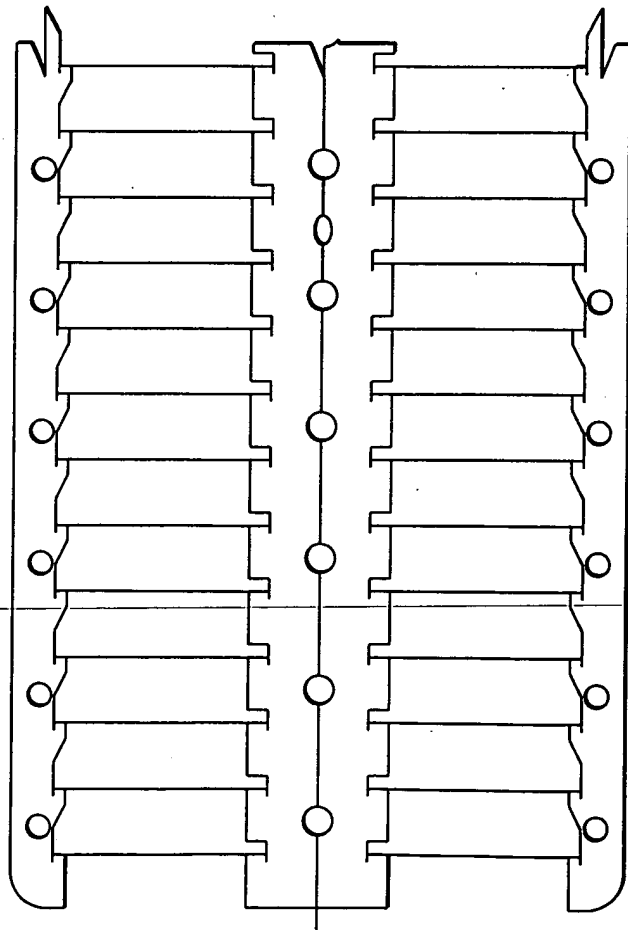


FIG. 13A(5)

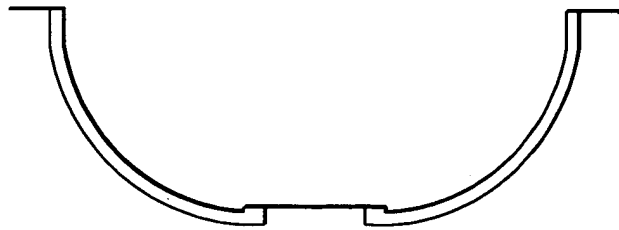


FIG. 13A(6)

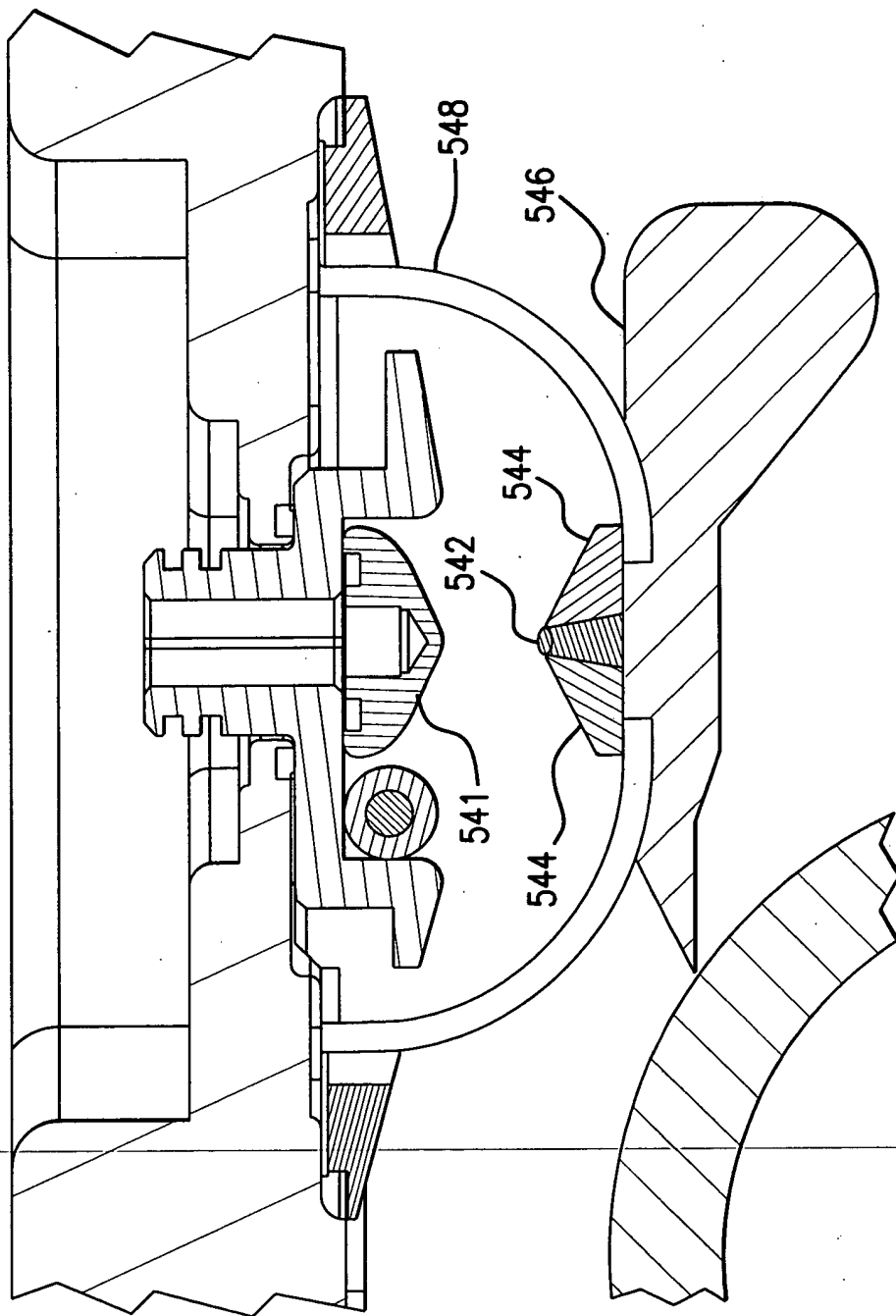


FIG. 14

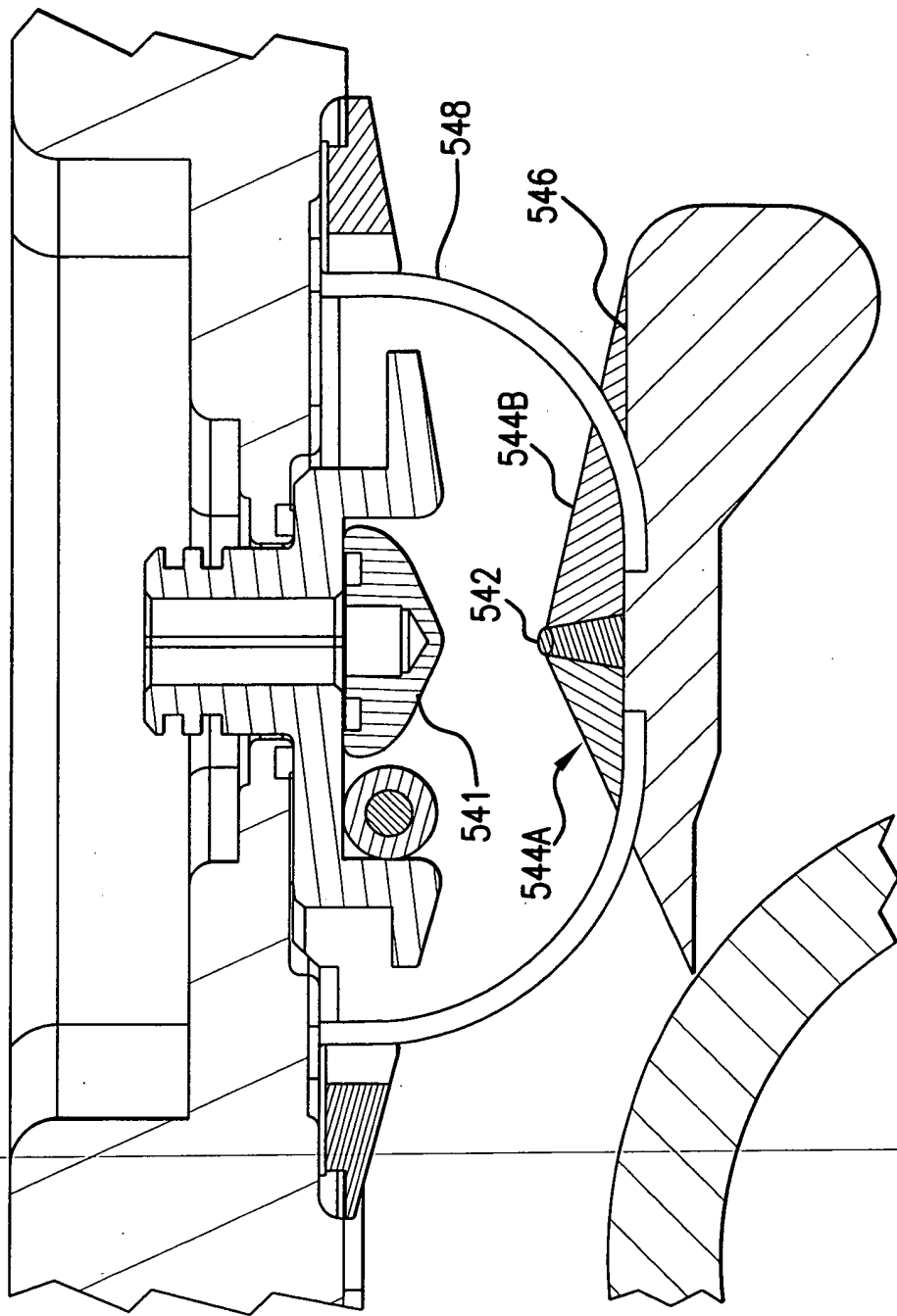
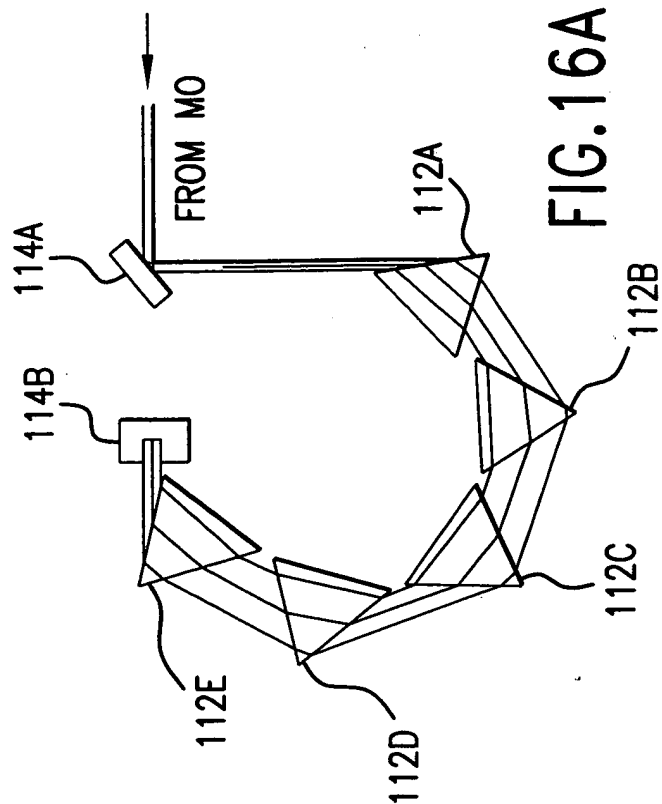
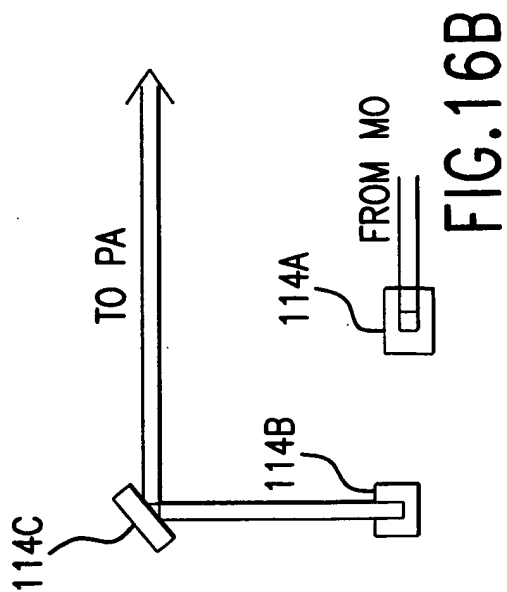
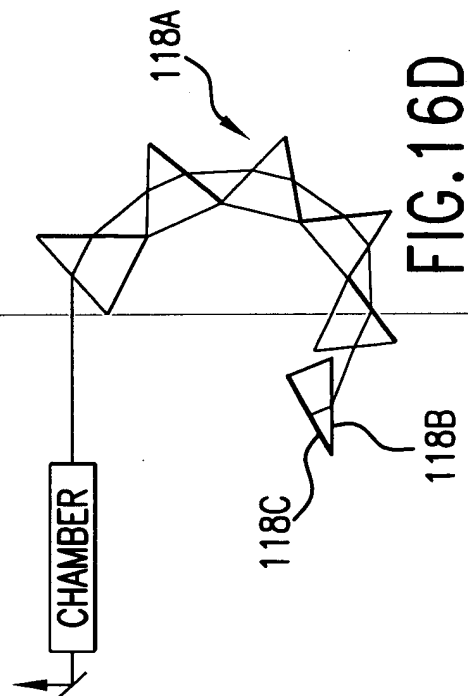
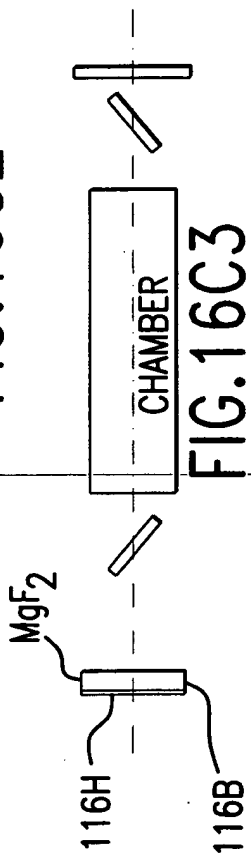
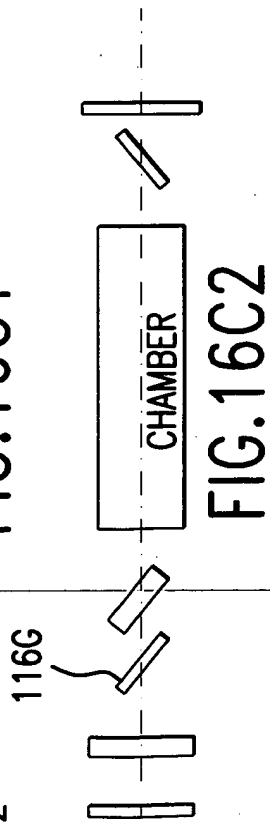
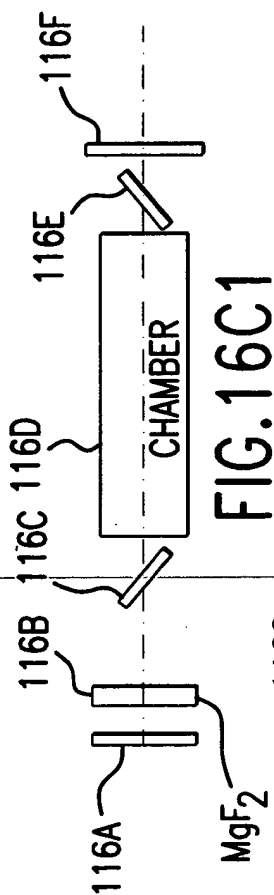


FIG. 15



10056619.042602

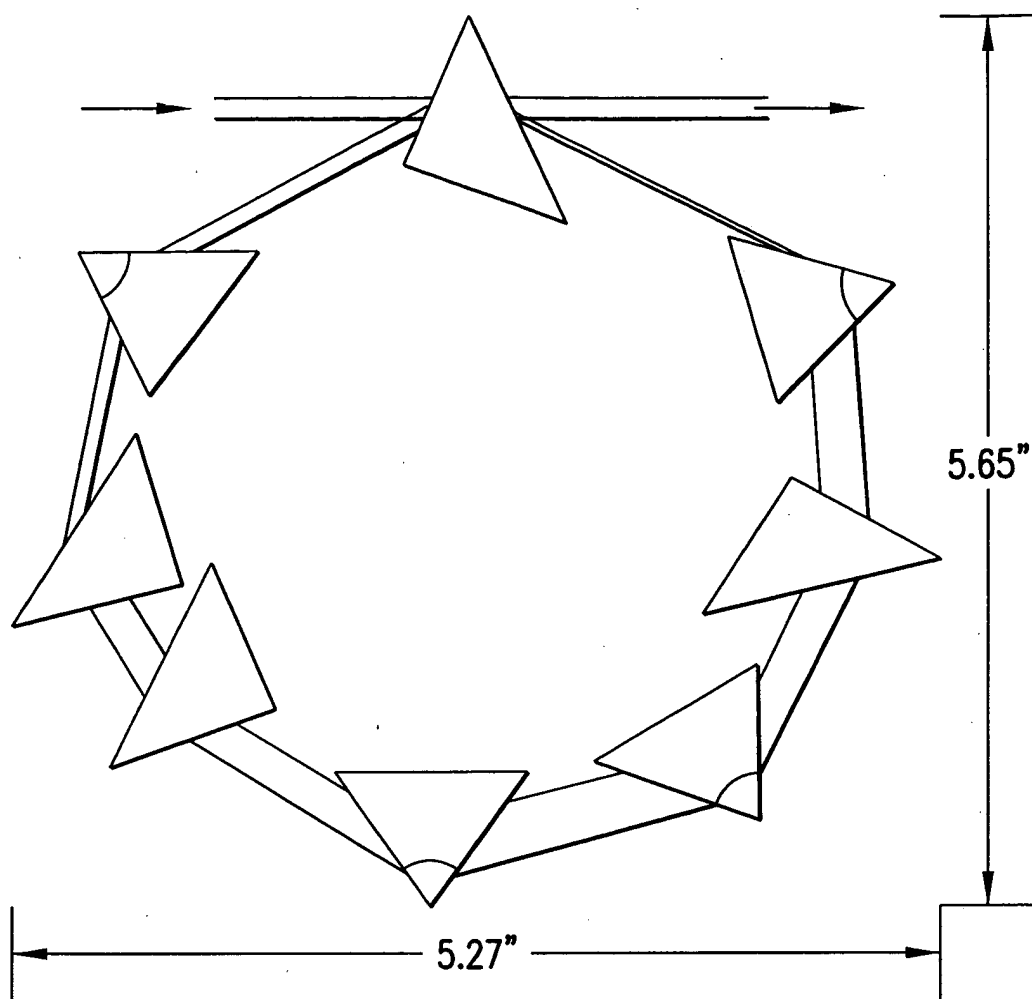


FIG. 16E

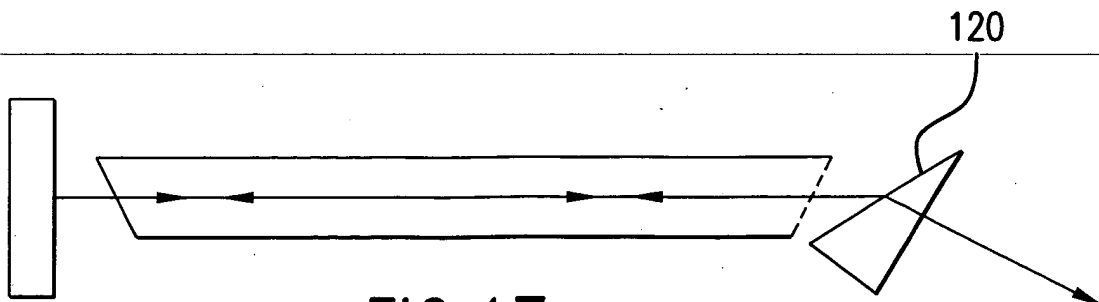


FIG. 17

20240619 105639.04602

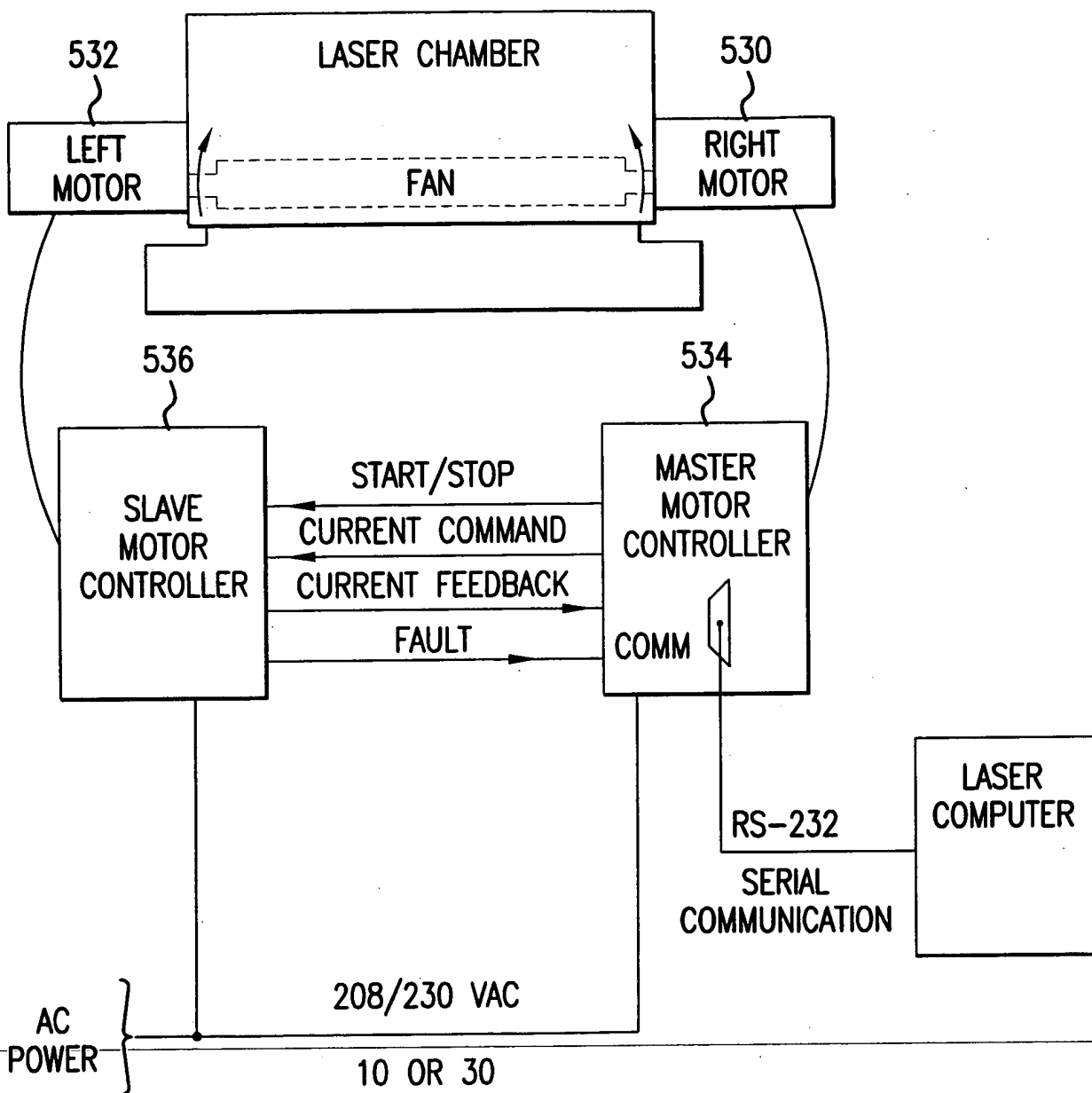


FIG. 18

209240" 6T99500T

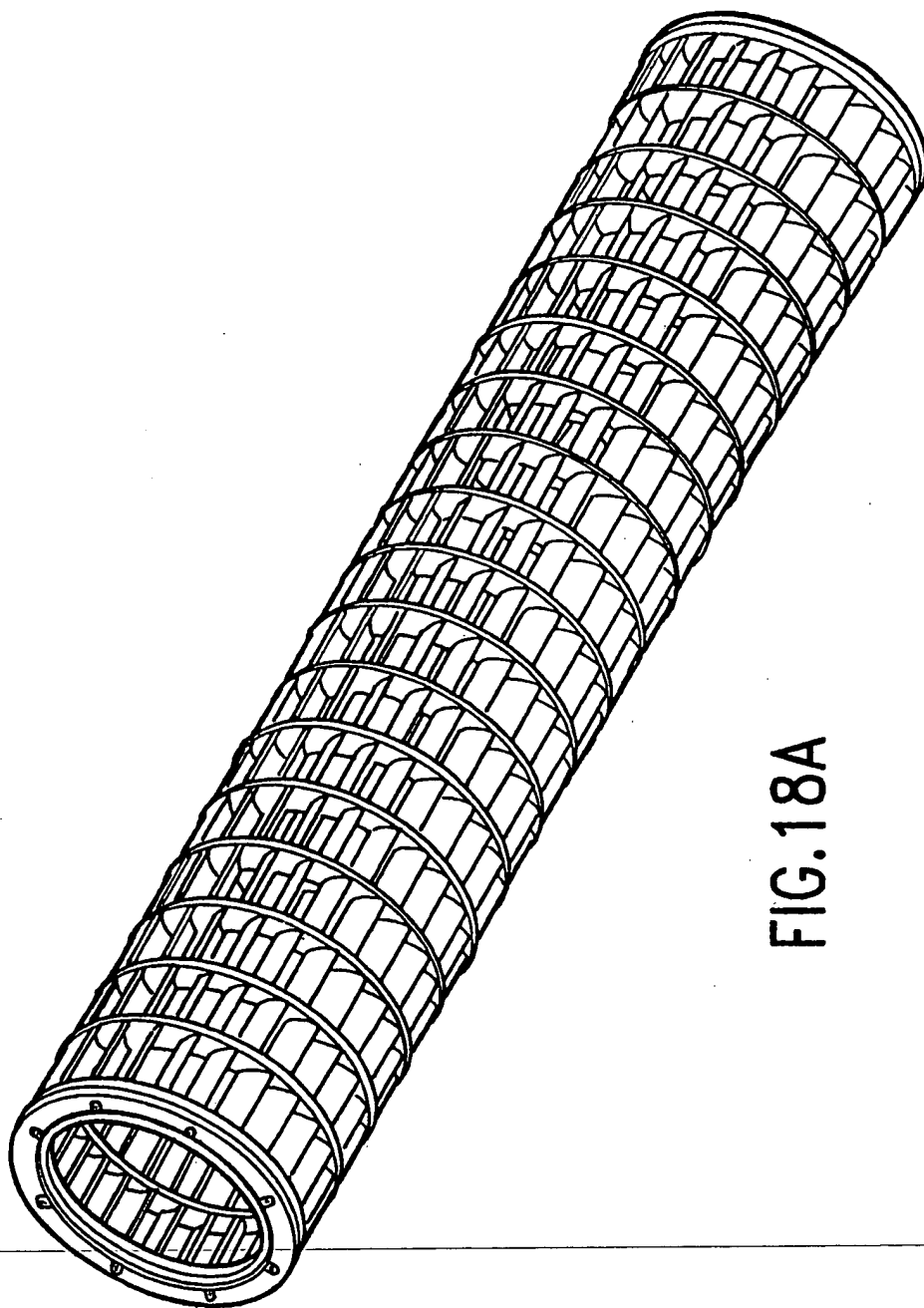


FIG.18A

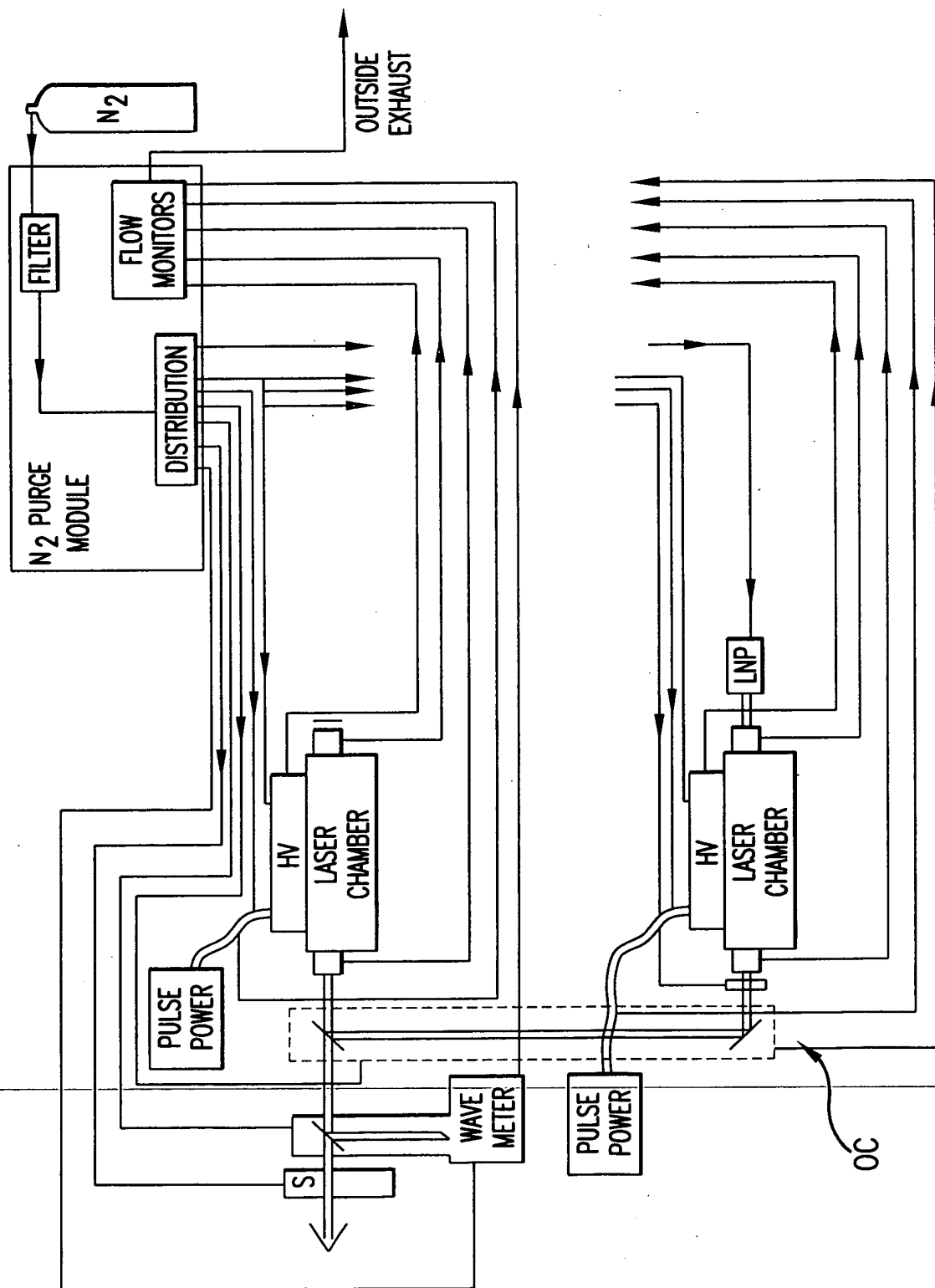


FIG. 19

20250619 104230Z

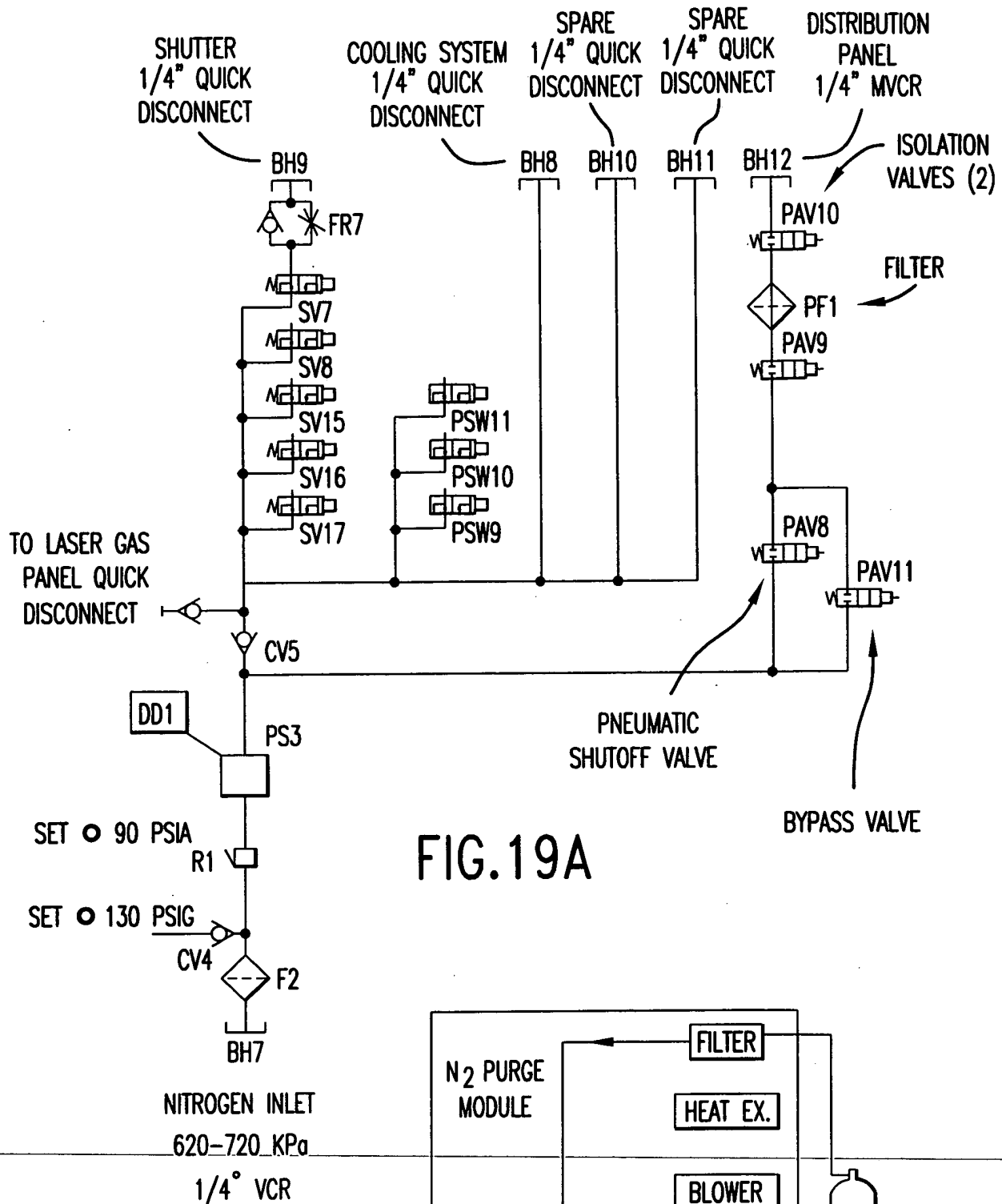


FIG.19A

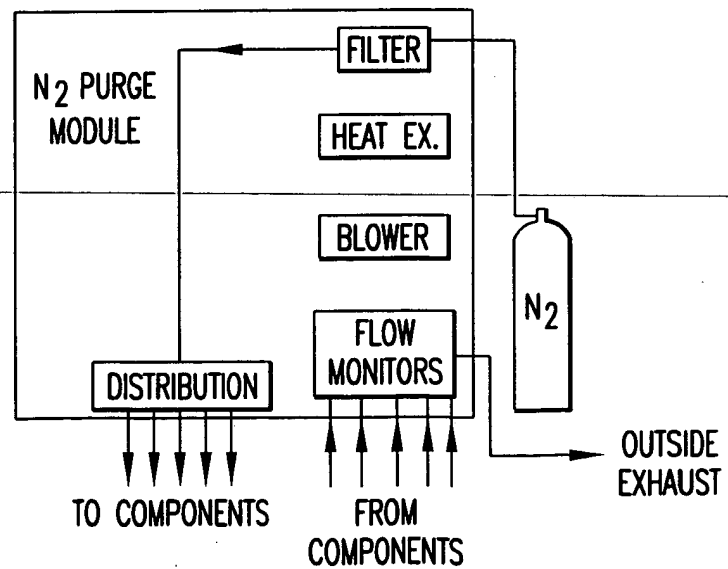


FIG.19B

20240619045001

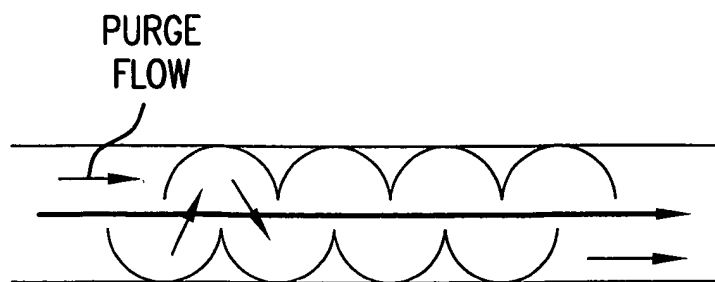


FIG.19C1

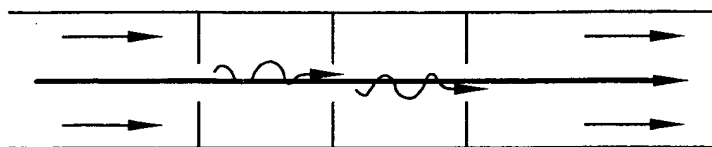


FIG.19C2

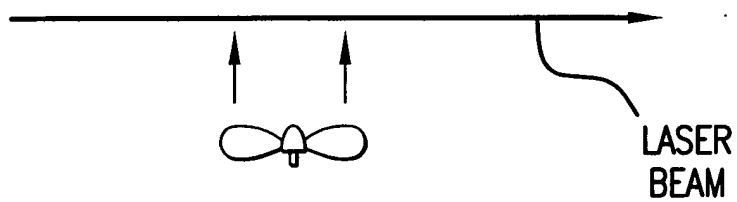


FIG.19C3

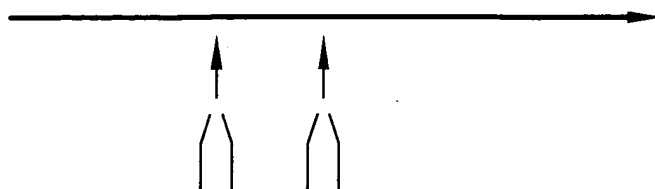
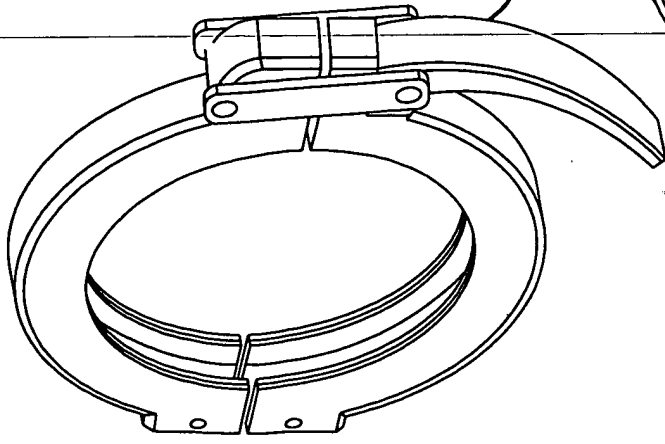
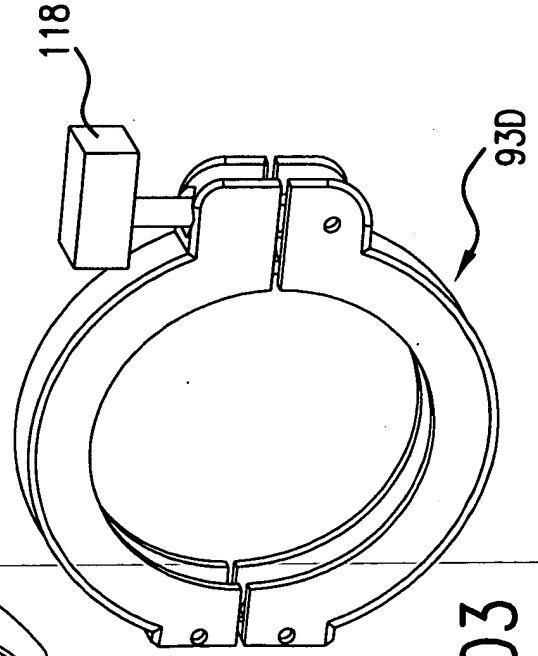
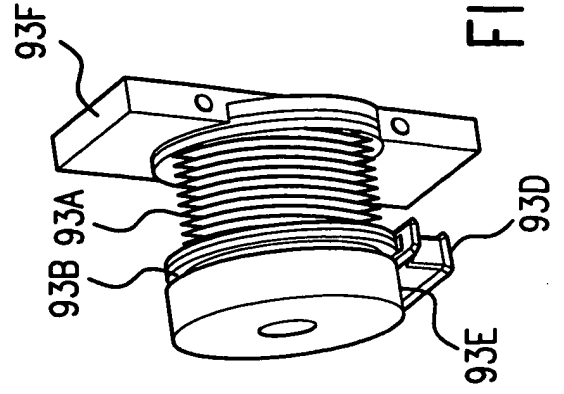
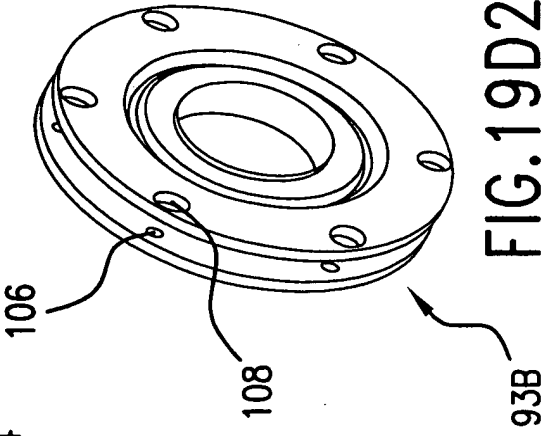
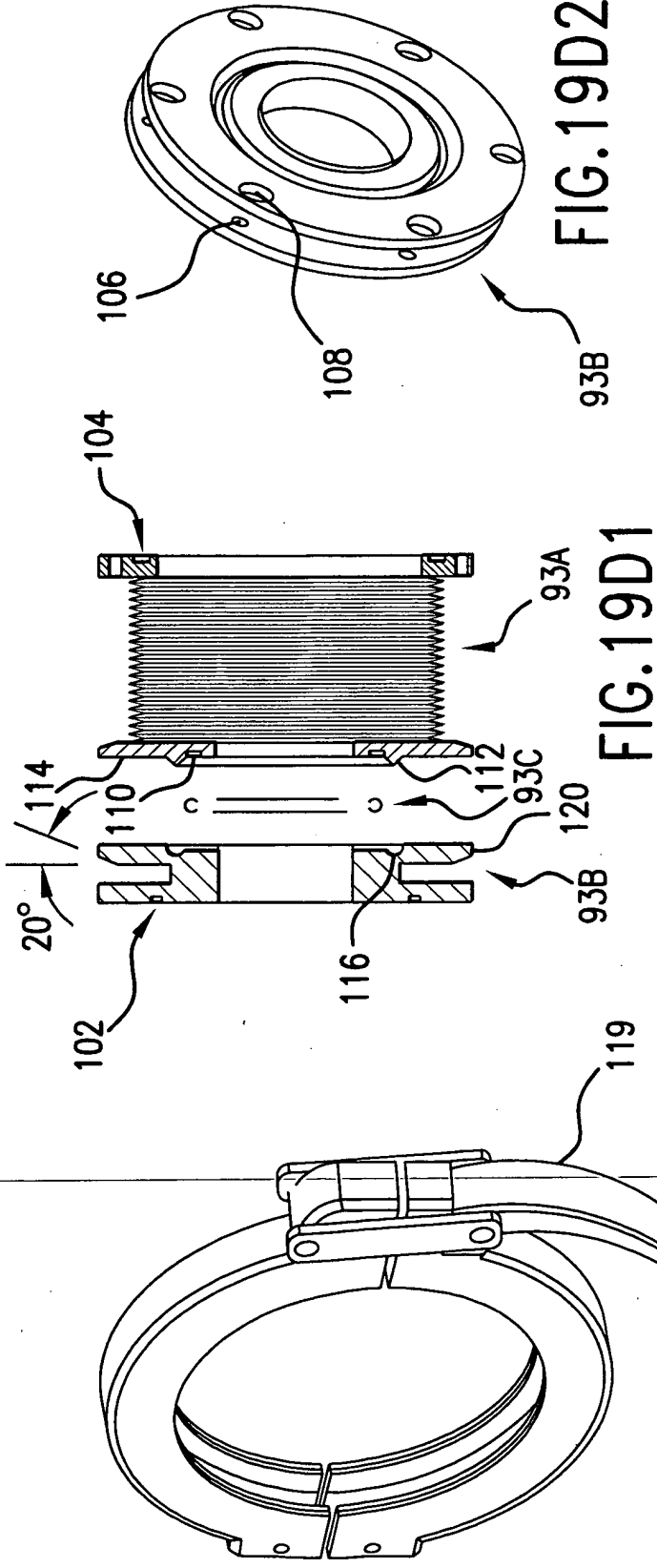
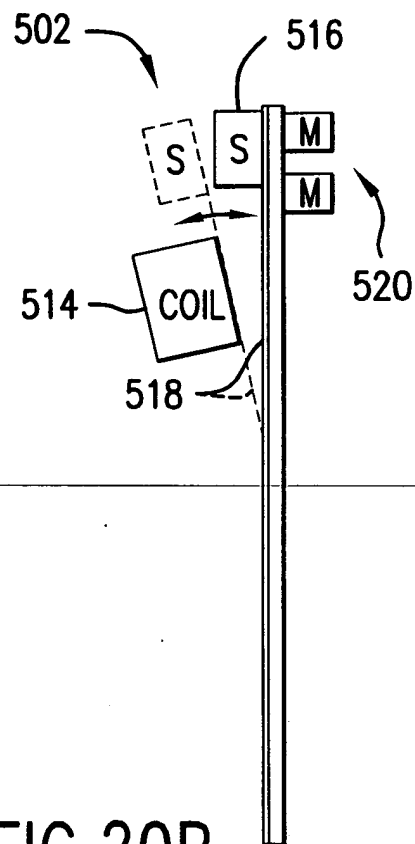
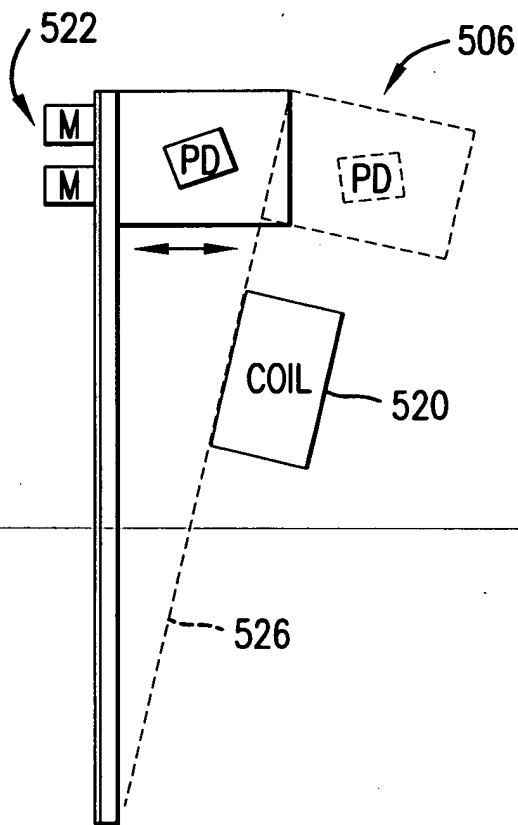
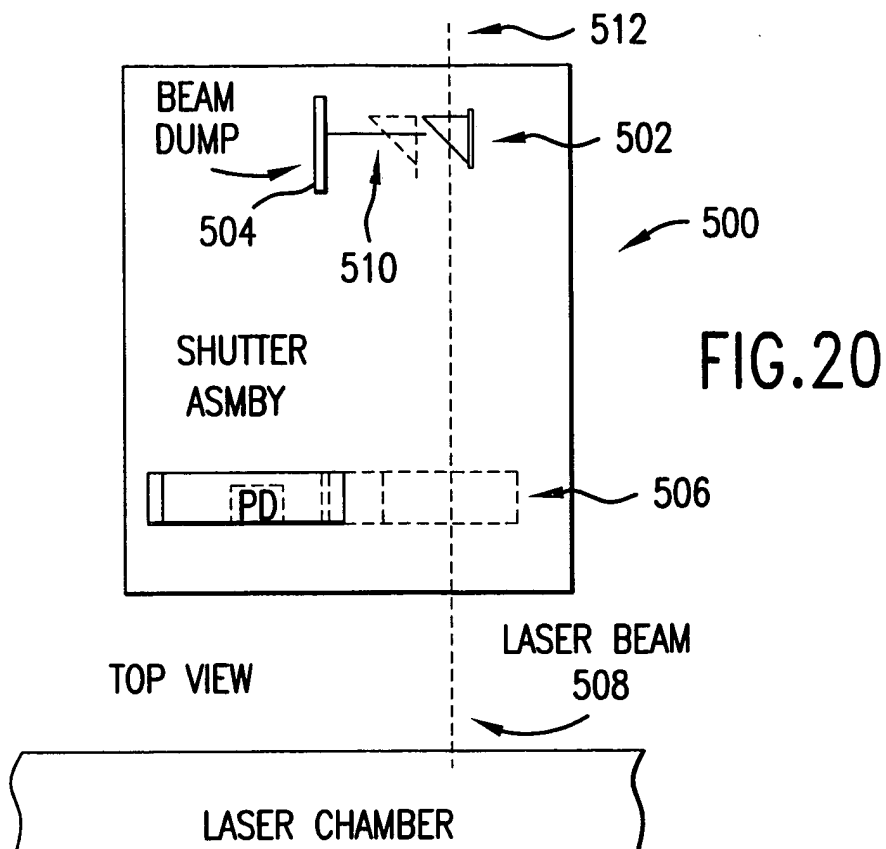


FIG.19C4





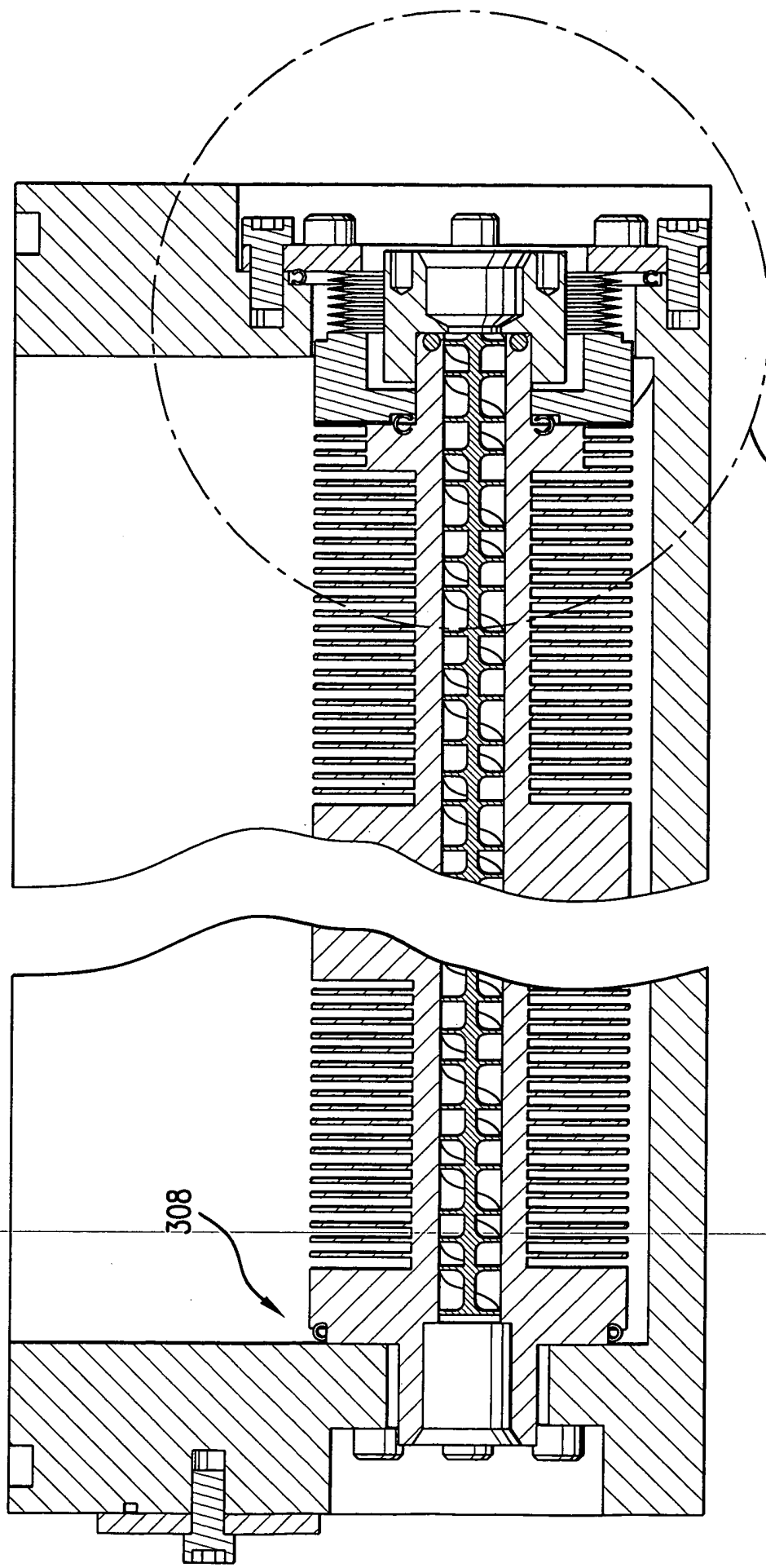


FIG.21A

FIG.21

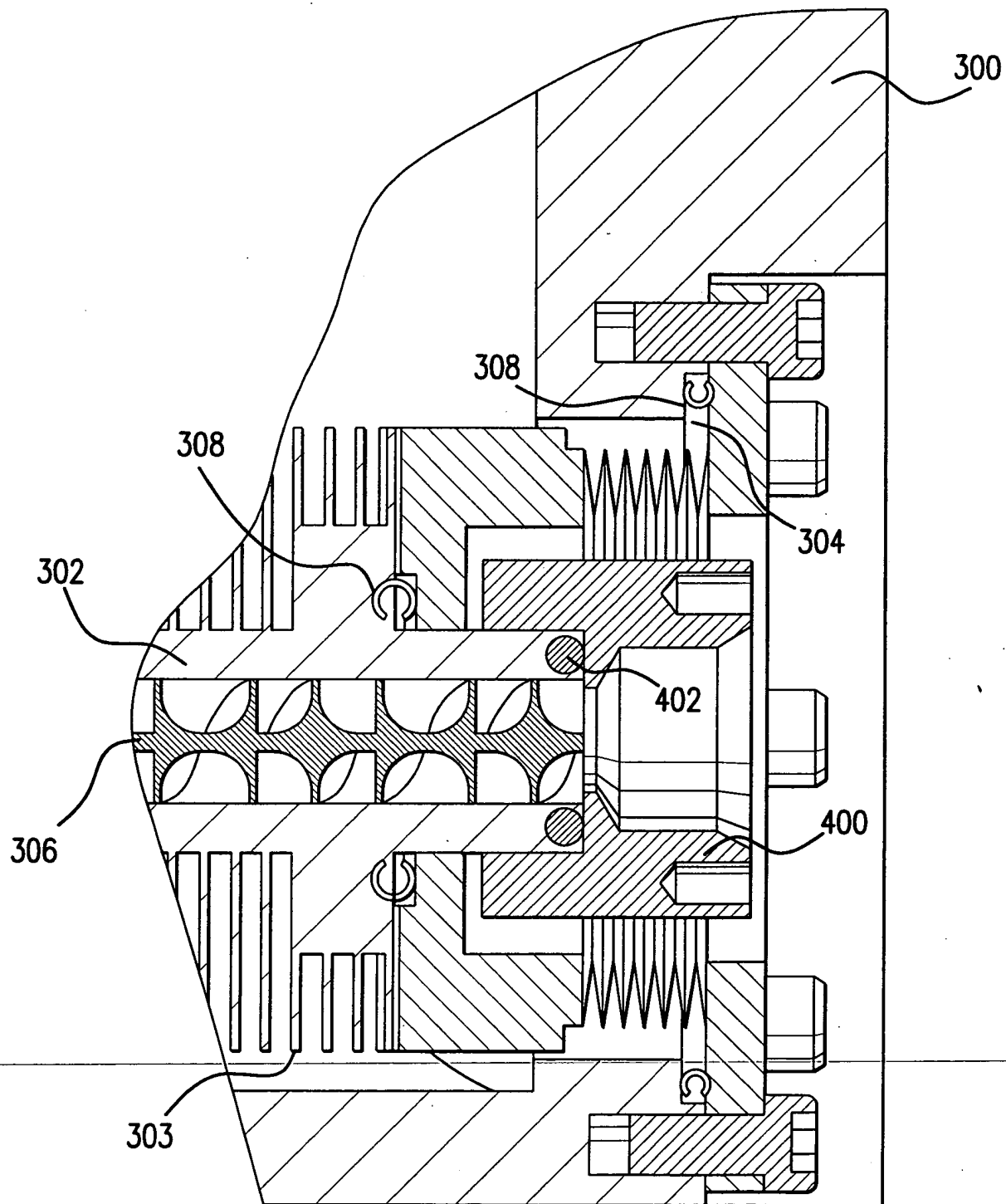
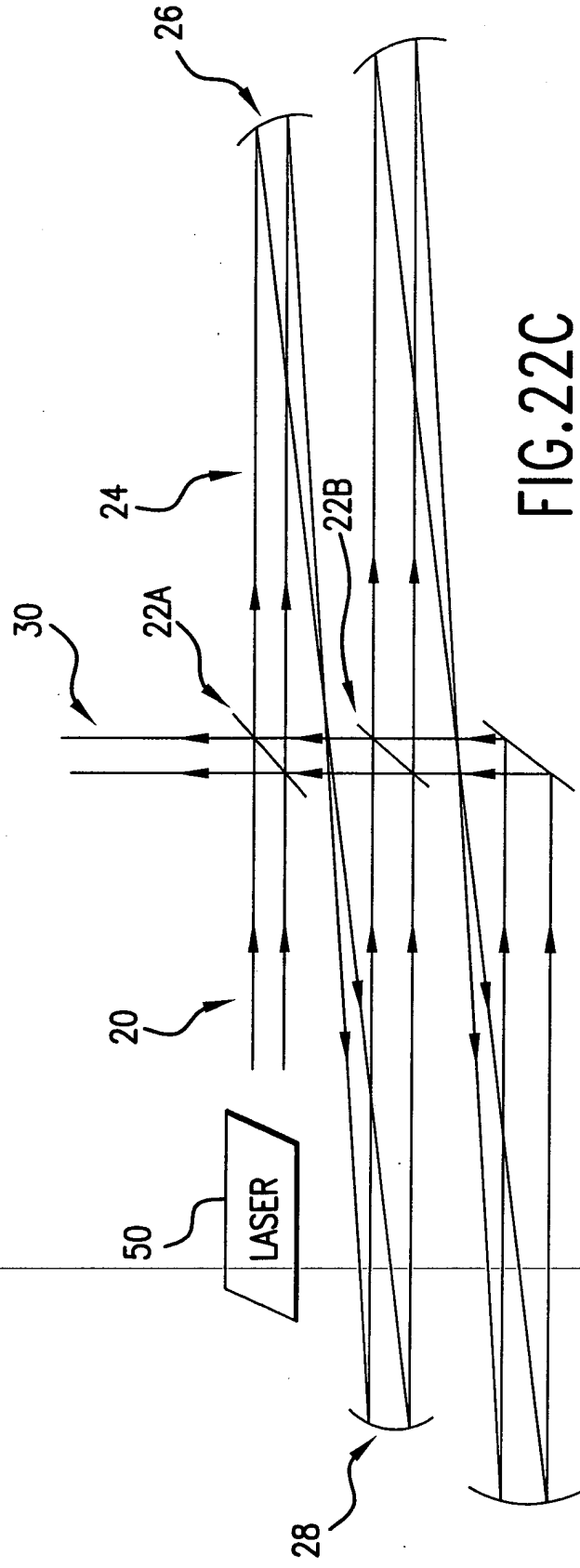
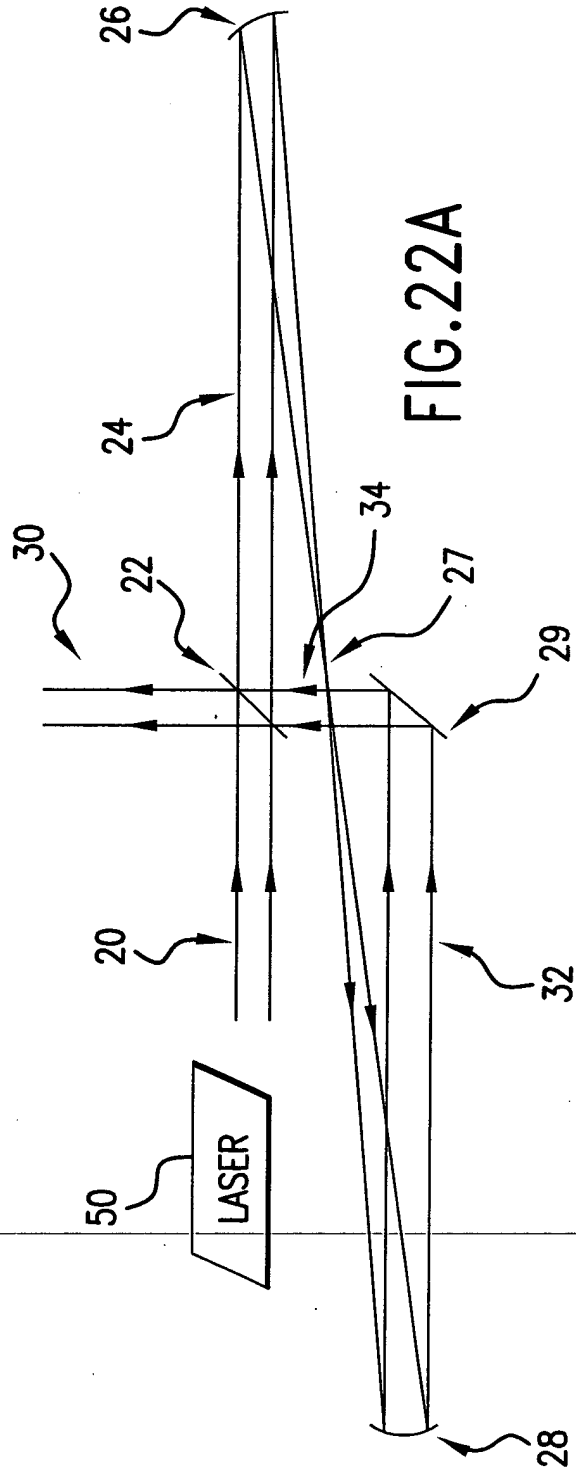
[illegible]

FIG.21A



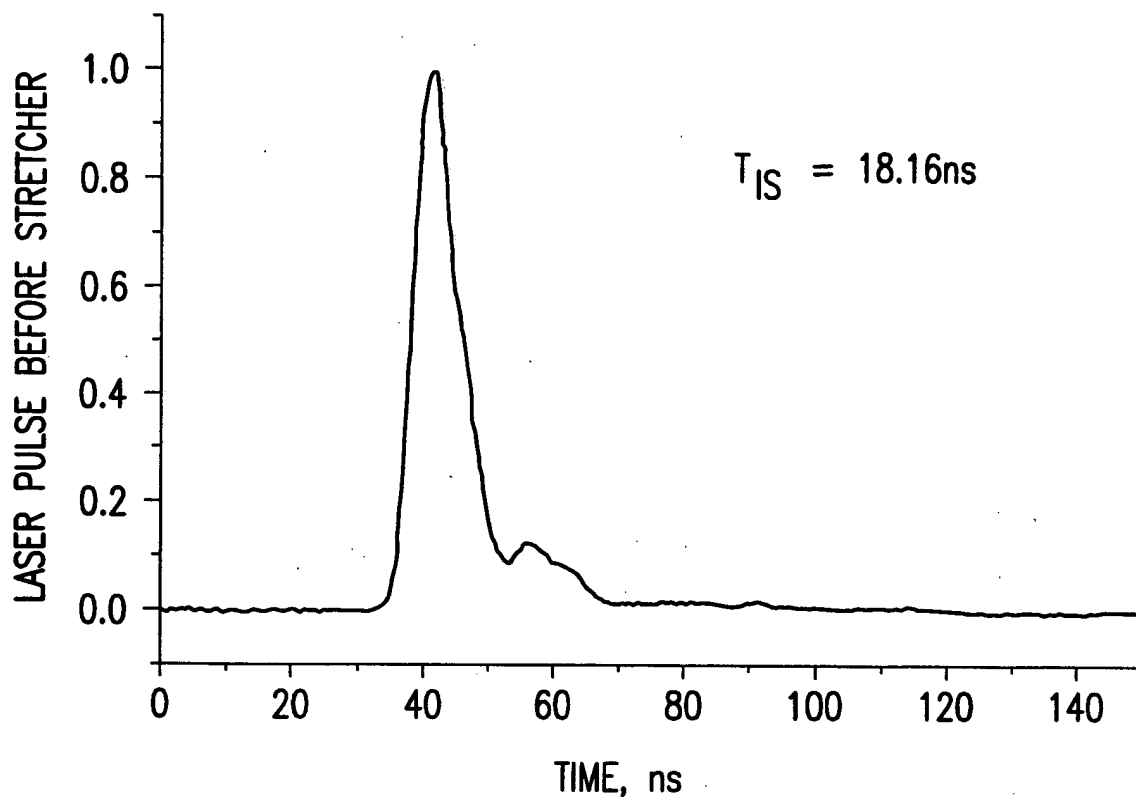


FIG.22B1

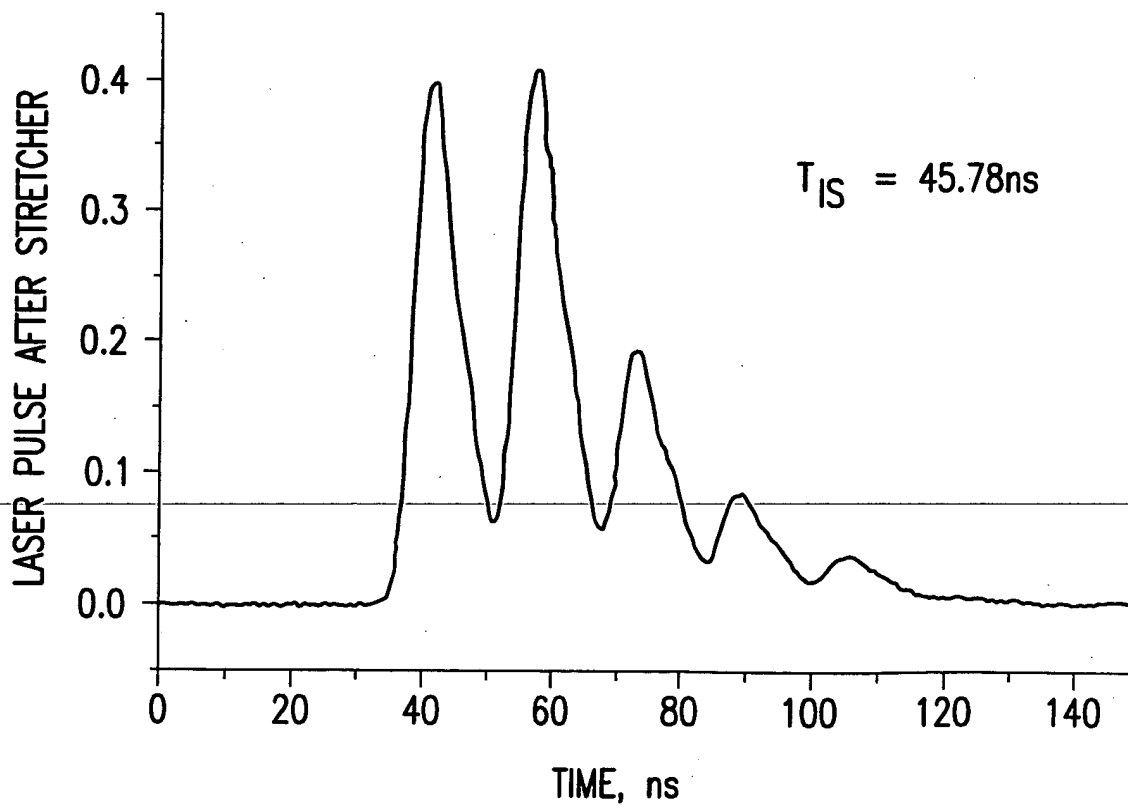


FIG.22B2

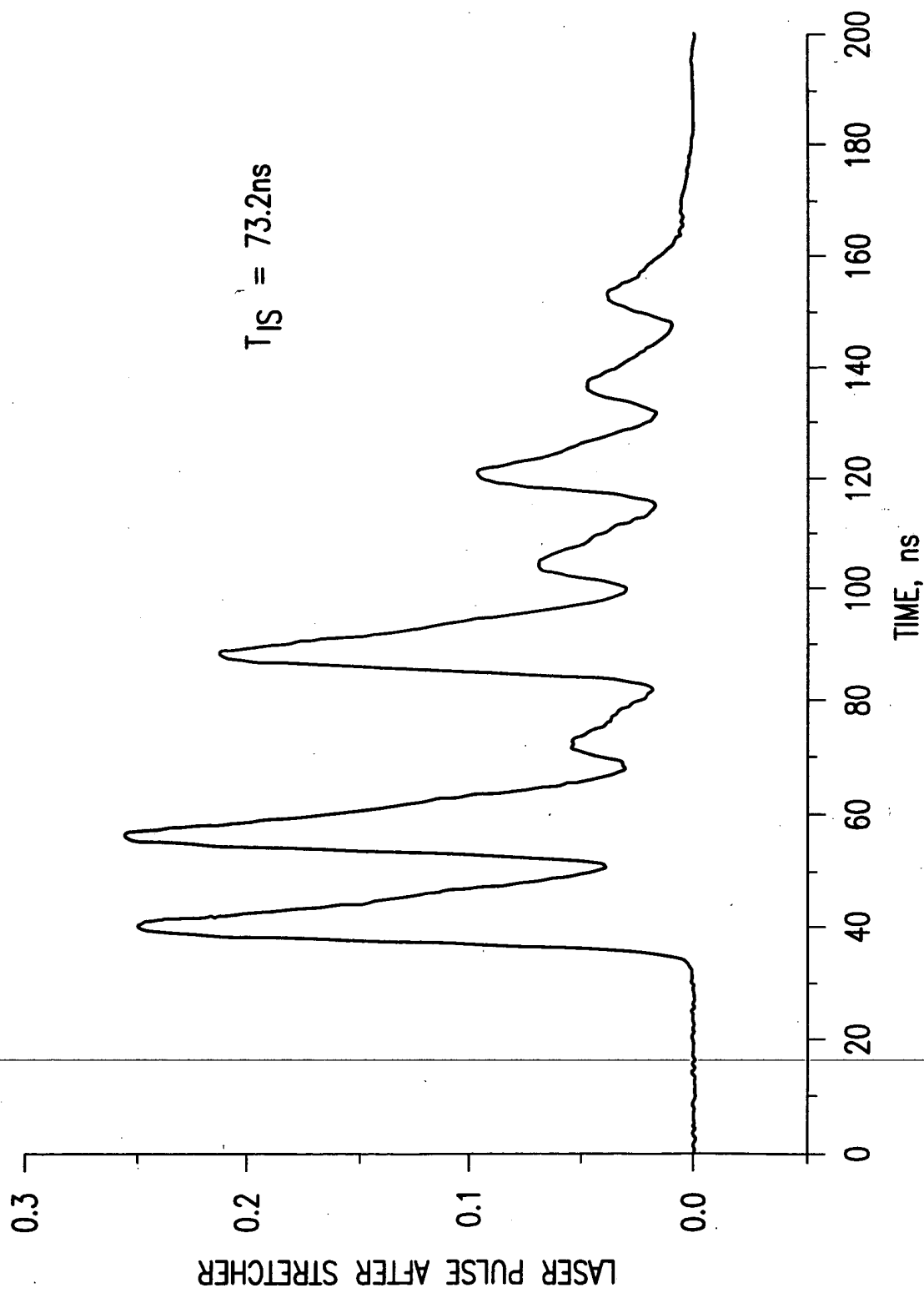


FIG.22D

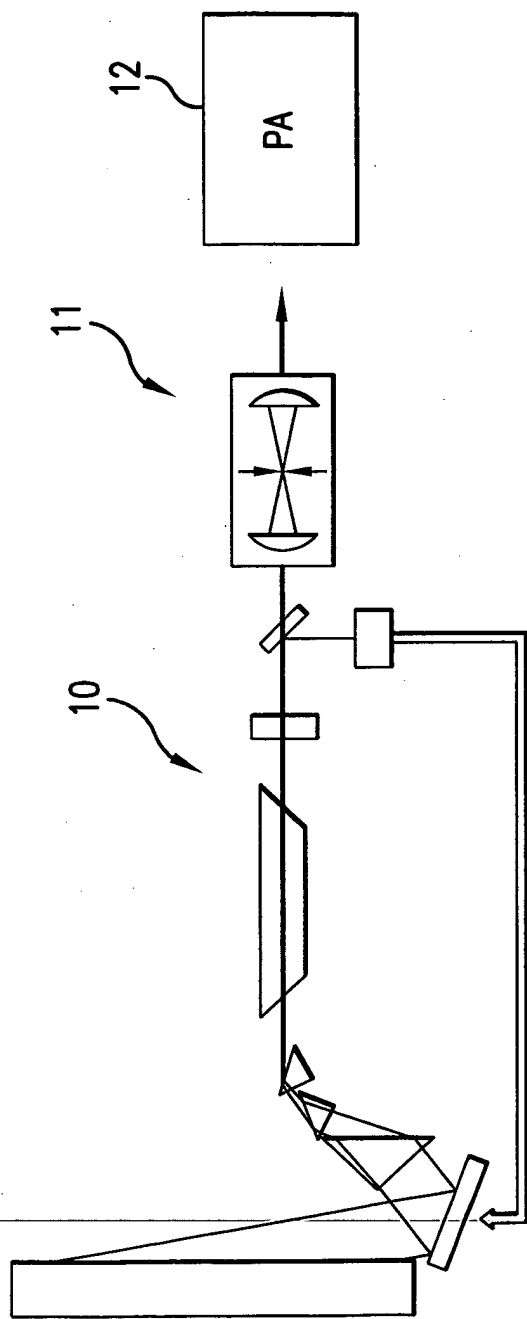


FIG. 23

TIR SPATIAL FILTER TRANSMISSION FUNCTION

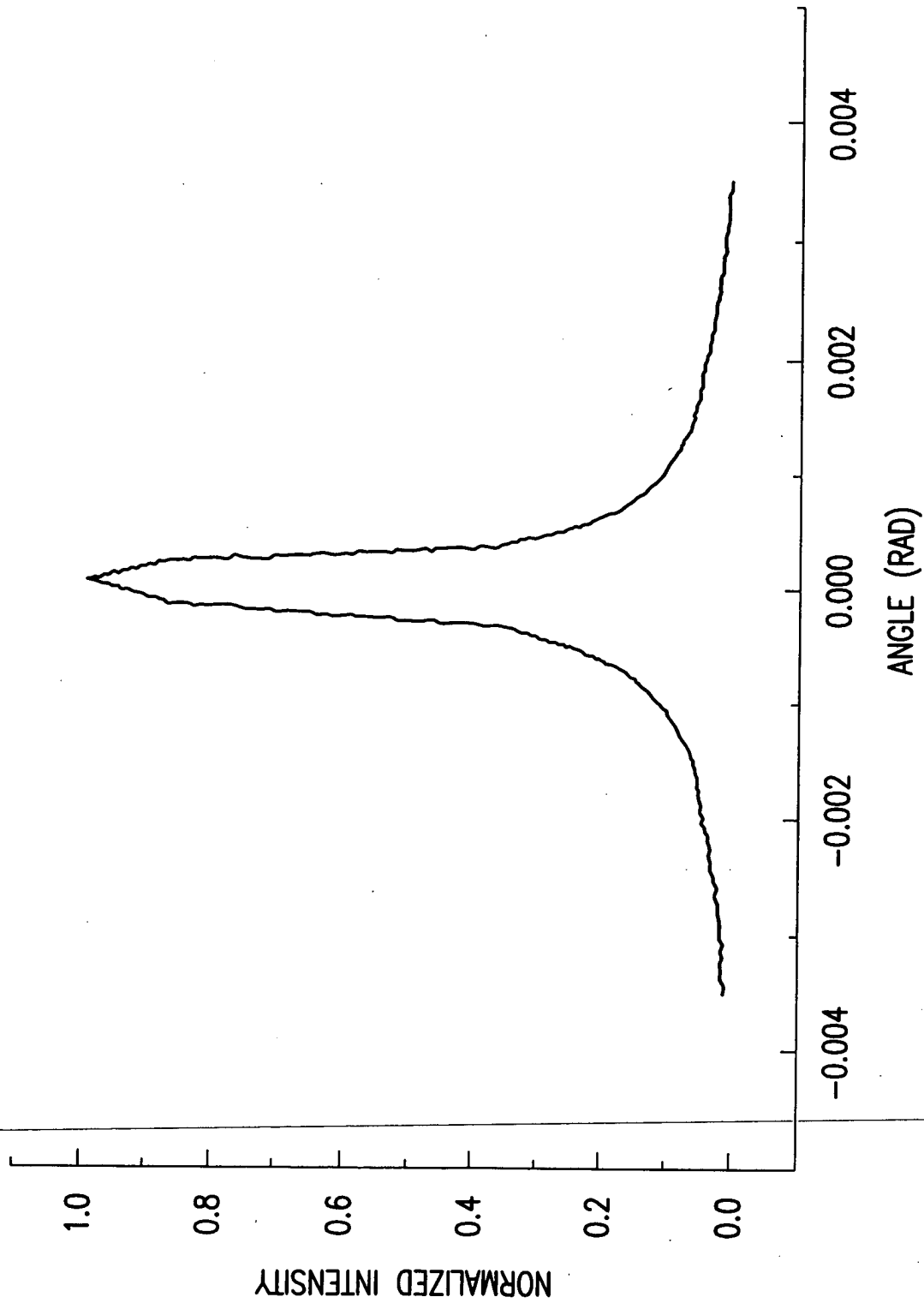


FIG.23A

209240" 6T99500T

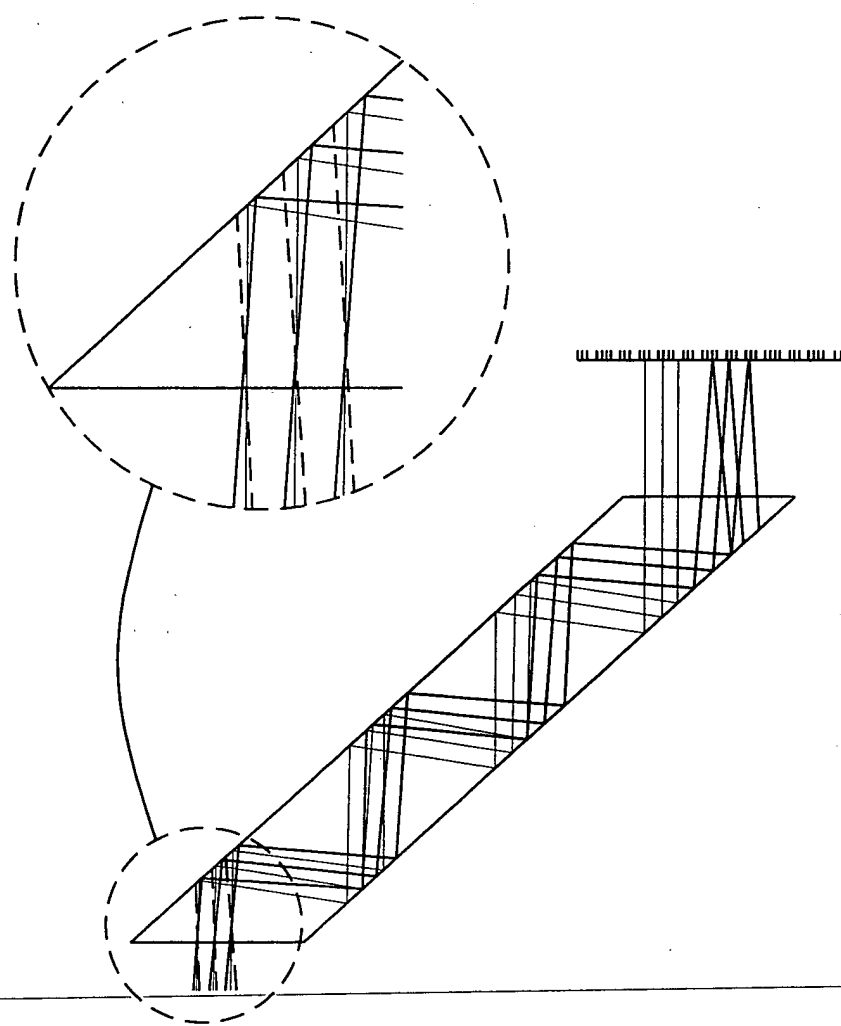


FIG. 23B